10.22034/3.8.6 *Revitalization School*, *3*(8), 60-67, 2025

Original Research Article

"Water City"River and the Being of the City; Conceptual Rethinking of Water City in the Framework of Landscape Ecology (Case Study: Babolroud River)

Mehdi Heydarizade Shalli[1*]
Saeed Haghir[1]
Vahid Heidar Nattaj[2]

1. Department of Landscape Architecture, School of Architecture, College of Fine Arts, University of Tehran, Iran

2. Department of Architecture, Faculty of Art and Architecture, University of Mazandaran, Babolsar, Iran.

ARTICLE INFO

Received: 04 August 2025
Revised: 05 September 2025
Accepted: 11 November 2025
Online available: 22 November 2025

Keywords
Water city
Ecological landscape
Urban landscape
Collective memory
Riverside landscape

ABSTRACT

In many water-based cities in Iran, the perceptions of the rivers have been reduced to limited to their physical, functional, or purely ecological aspects within contemporary development. Moreover, their role in shaping the city's meaning, identity, and spatial organization has been ignored. In the historical development of cities, rivers have played roles beyond biological infrastructure and have been significant in shaping cities' spatial structures, livelihood systems, environmental perceptions, and collective memories.

To conceptually rethink the relationship between the city and water, the present study proposes the "water city" as an analytical framework within landscape ecology. This concept considers the relationship among the city, the river, and the human in a multilayered, simultaneous manner across the developmental, bio-ecological, perceptual, and semantic levels. The research employed a qualitative, descriptive-analytical, and interpretive approach, conducted through a review of theoretical literature, argumentative analysis, and an examination of the urban landscape.

To illustrate this framework, the city of Babol and the Babroud River have been selected as a case study. The findings show that the Babolroud River has played a formative and structural role in shaping the city's initial core, the orientation of spatial growth, the organization of economic activities, and the formation of citizens' perceptions and collective memory. However, in the course of contemporary development, this role has gradually weakened, and the river has been reduced primarily to a functional corridor or to urban drainage.

The results of the study show that the revival of the relationship between the city and the river requires a look beyond purely engineering and ecological interventions. The concept of the water city can serve as a framework for understanding and reinterpreting Iranian water-based cities and provide a basis for strengthening spatial, perceptual, and semantic links among the city, the river, and the citizens.

* Corresponding author: **Phone:** +989055067006, **E-mail:** mehdiheydarzadeh71@gmail.com

This is an open access article disributed under the terms and conditions of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/)

[Downloaded from jors-sj.com on 2026-11-08]

[DOI: 10.22034/3.8.6]

Introduction

In most ancient civilizations, cities were established adjacent to water resources and were influenced by them; their form was also derived from the rivers. The proximity of water and the city led to the formation of linear cities shaped by the river, which also expanded along its course and influenced people's perception of the river as a life-giving phenomenon and a sacred heritage. In the contemporary world, the relationship between a river and a city no longer implies a life-giving phenomenon and a sacred heritage. The expansion of welfare and industrial facilities and the creation of a semantic distance between humans and rivers have reduced rivers to green-blue axes, leisure spaces, or purely natural substrates; as a result, their place in the organization of urban structures is at risk.

In contemporary urban development plans, new criteria and priorities are incorporated into the planning and design process. Cities are considered as separate islands or algebraic sums of parts (component approach), regardless of semantic dimensions, and as separate bodies, based on their functions. The relationship between the city and the river is that of two distinct urban elements adjacent to each other, both of which depend on human activity to sustain their existence. The lack of integrated communication renders the city and the river appear devoid of meaning and landscape identity. In contrast, Majidi has interpreted the city as a hypertext of visual and structural forms of formal signs that convey meaning (Majidi et al., 2019). In this type of development, the river, rather than influencing the organization of urban structures, is merely a service and role-playing element of the city, which also derives its identity from the city. As a result, the river becomes a place for disposing of household and industrial waste, urban sewage, and a source of environmental pollution, which can be considered as a consequence of an approach that, resulting from mechanistic perspectives, summarizes the city in the body (Maghsudi et al., 2020) and analyzes it separately from the river. Therefore, ignoring the river as a physical-semantic phenomenon contributes to a disconnection among the city, the river, and the citizens within a single semantic system, thereby weakening the sense of place among citizens.

In contrast to current development approaches in Iran, which generally focus on rivers with functional and purely physical (objective) dimensions, other environmental approaches are also considered, often emphasizing environmental issues. In most executive readings of these approaches, the relationship between landscape and water is addressed, understood as an engineering, spatial, and ecological relationship. It also seems that, by strengthening the effectiveness of environmental approaches, the roles of human mentality, spatial dimensions, and socio-cultural attitudes in the relationship between humans and landscape are diminished. Katusiime et al. (2023) consider river basin management in response to land acquisition to promote the restoration of water landscapes and improve human health indicators . Meanwhile, in water-based Iranian cities, rivers can be not only natural arteries and active biological corridors but also suitable biological, identity, and social contexts for rethinking the conceptual relationship between landscape and humans. However, within environmental approaches, less attention has been paid to the conceptual and analytical dimensions of the river that give rise to cities.

Water city, as a conceptual phenomenon, considers the relationship among the city, water, and humans beyond biological/ecological, infrastructural, or historical parameters. A relationship in which city, water, and humans simultaneously and reciprocally influence each other. Water City is an attempt to reinterpret the relationship between the city and water as an integrated system, connected to the physical structure, biological/ecological processes, and socio-cultural meanings. This concept is not in conflict with other environmental approaches but rather aligns with their conceptual expansion within the academic landscape. With an objective-subjective approach and in human interaction, Water City seeks to avoid reducing the semantic identity of water to a purely natural, biological flow in the landscape and, by recovering its semantic and social aspects, to strengthen the river's role in the city's existence. Therefore, given the conceptual nature of the Water City phenomenon and its structural distinction from other environmental approaches to the city-water relationship, it seems necessary to examine this issue in contemporary urban systems. This research aims to answer the question: What role do urban rivers play as biological-identity corridors based on the landscape ecology approach in explaining the concept of Water city?

Research Methodology

This research aims to achieve the desired goals and address the questions raised. It was conducted using a qualitative approach and a descriptive-analytical and interpretive policy, and its goal is to explain and formulate the concept of the water city within the framework of landscape ecology. First, through a documentary study and a review of the theoretical literature on urban landscape, landscape ecology, urban rivers, landscape perception, and collective memory, the key components in the relationship between water and the city were identified. Subsequently, the data were analyzed using the argumentative-deductive method, and a multilayered framework was formulated to interpret the relationship among the city, the river, and humans.

In the second stage, to explain and analytically apply the water city framework, the city of Babol and the Babolroud River were selected as a case study. A case study analysis was conducted with a descriptive-analytical approach based on historical data and urban landscape reading, and the river was examined as a developmental, biological-ecological, perceptual, and semantic system. Finally, by combining theoretical and case findings, the shaping components of the concept

[Downloaded from jors-sj.com on 2026-11-08]

[DOI: 10.22034/3.8.6]

of water city in the context of Iranian water-based cities were explained.

Theoretical Foundations

The concept of the water city is adopted as the dominant theoretical framework in the present study, and to identify its constituent layers, the following theoretical foundations have been examined and organized. Accordingly, the reading of the river in contemporary urban development is examined: its formative role in the city's formation; its position as bio-ecological infrastructure; and, finally, its role in the perception, meaning, and collective memory of the city (Fig. 1).

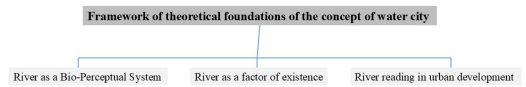


Fig. 1. Framework of theoretical foundations of the concept of water city. source: authors.

Reading the River in the Contemporary Urban Development Process

The main purpose of this speech is not only development but also the way of understanding the river in the urban development process. The river in contemporary urban development is examined through various approaches. In the first step, the physical-spatial approach takes precedence in the river development process; the river is defined as a single urban element or as a spatially connected component of the city. In the next step, the impact of changes resulting from the expansion of urban/human activities on the river wall is considered, as it is applied to the processes of organizing, revitalizing, and managing rivers. In the third step, the ecological and natural parameters effective in the river are considered (Fig. 2). Topics such as the loss of river ecological functions (Ward, 1998), the disruption and reduced services of river ecosystems as a result of human activities (Haeri & Masnavi, 2023), ecosystem degradation and watershed management (Bennett, Peterson & Gordon, 2009; Haeri & Masnavi, 2023), the protection of river boundaries due to unbridled urban development (Masnavi et al., 2016), and the lack of systematic and comprehensive considerations in past engineering projects (Schilling et al, 2021; Wang et al, 2021) have been addressed. In the three approaches mentioned for the problem of reading urban rivers, rather than attending to the river's structural and formative role in the logic of city formation, corrective interventions are addressed in formal terms and, at times, under the guise of environmental disorders. As a result, we are faced with reducing the river's role to an ecological management issue within a technical, engineering, and environmental framework, thereby producing an objective reading of the river within the urban structure. In this way, an objective view of the river prevents the perception of the river as a productive and developing parameter of the city. As a result of this conceptual break, a rethinking of the relationship between the river and the city seems necessary, which should be carried out in the form of comprehensive approaches and beyond purely ecological interventions, which should not only

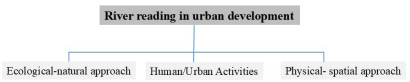


Fig. 2. River readings in urban development. source: authors.

be a problem for management, but also a redefinition of the river as an existential, meaningful, and inseparable element of the city.

River as a Factor of Existence of the City

• River as a factor of formation

The formation of cities has been driven by several factors, including proximity to water resources, security, geographic orientation, terrain slope, and the capacity to produce agricultural products. In this article, water-based cities are considered, which have been formed around rivers. The vital role of water and the lack of transportation infrastructure have been important factors in the structural convergence of water and the city in the past, shaping cities with a spatial structure influenced by water flow. In this spatial structure, the initial core of cities has emerged at a reasonable distance from the river and in the distance between; cemeteries, agricultural lands and small and large ponds have been formed (Fig. 3). The development of the city has been affected by the flow of the river, so that; a very large percentage of urban streets and passages are still affected by the flow of water and the unevenness of the land parallel to or leading to it, relative to the flow of the river. In this structure, rivers are not merely sources of water; they also play a formative role and have established a structural relationship among water flow, livelihood patterns, and the spatial organization of the city. This structural relationship has provided the material and semantic grounds for the emergence of cities (Kostof, 1991), such that the city is a product of nature (Athshinbar, 2009) and develops alongside and is influenced by rivers. To be more precise, it can be said that the city obtains its identity and an important part of its spatial structure from the river.

River and spatial-historical organization of the city

In the history of urbanization and in ancient civilizations, Egypt and Mesopotamia are prominent examples of the influence of river geometry and form. The spatial-semantic nature of the river influences the basis of its development pattern. Linear forms, longitudinal

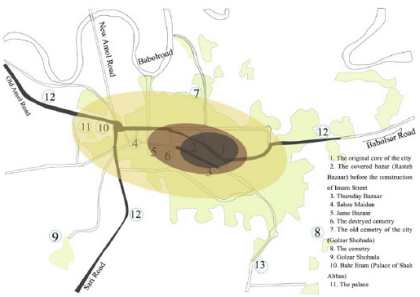


Fig. 3. The initial core of the city (old urban organization map of the city), Source: Authors, according to the Heydarizade Shali, 2022.

[Downloaded from jors-sj.com on 2026-11-08]

[DOI: 10.22034/3.8.6]

extension, and concentration of activities at the water's edge are common patterns in river-centered cities (Mumford, 1961). The river is not only a decorative element in the city, but also, as the backbone of its spatial organization, it gives order and identity to the network of passages, public areas, and residential spaces. In Iran, the cities of Isfahan and Shushtar are prominent examples of the river's influence. In Isfahan, the Zayandeh-Rood River and the "Madi," which runs parallel to the river, channel water into the urban fabric, serving as an intermediary factor in the relationship between the city and the river. The materials provide evidence of the city's growth and development, with the slope of the land and the alignment of urban axes with the river as organizing axes. It can be said that the urban layers are formed according to the flow of the river and derive meaning from it.

River as the ontological foundation of the city

These historical evidences are also reflected in contemporary theories of landscape and human ecology. From this perspective, rivers can be considered as biocultural corridors that establish a dynamic link between natural processes and human actions. Emphasizing "natural forms as the foundation of the city", Spirn (1984) shows that ignoring the impact of natural structures such as rivers in the process of urban development, fragmentation of the landscape due to ecological effects (Li et al, 2025), reduces the meaning and legibility of the urban landscape. The river can be considered a corridor of city perception (Abdi et al, 2024). Therefore, in this framework, the city does not develop solely on the river's banks but in continuous interaction with it.

Therefore, it can be concluded that rivers have played a substantial, active, and causal role in the process of city development; a role that extends beyond meeting biological needs and has shaped the city's spatial identity, spatial structure, and social systems. This reading opposes reductionist approaches that treat the river merely as a service or a physical element, ignoring its conceptual and identity contexts. The river is no longer considered merely a component of the city, but rather a part of its existence that provides the link between water, the city, and humans.

The River as a Bio-Perceptual System in the Urban Landscape

• Biological-ecological infrastructure

The river is not merely a watercourse within the city's spatial structure; it also serves as the region's primary biological artery. Rivers are the richest natural life-giving areas; biological foundations provide the substrates on which organisms continue to live within a process-oriented system. Unlike engineering infrastructure, which is static and single-function, biological infrastructure is process-based, and its role in organizing space, regulating natural cycles, and supporting human life occurs simultaneously across multiple layers (Forman, 1995). In engineering infrastructure, by channeling, concreting the riverbed and walls, and providing artificial edging and car access to the river, the river's environmental continuity is disrupted, and the natural flow of life in its bed is interrupted. As a result, the free flow of the river is disrupted, causing fragmentation of ecological corridors in coastal areas, leading to the destruction of plant and animal habitats, and significantly reducing the level of biodiversity (Wang et al., 2023; Allan, 2004; Capon et al., 2013, Hauer et al., 2016; O'Hanley, 2011; Petersen et al., 2023; Singh et al., 2021). In fact, by creating a dynamic natural network, the river exhibits multifunctionality across human, plant, animal, and environmental layers. In environmental approaches, rivers, as the most important ecological system, provide a suitable platform for creating biological continuity across scales from the watershed to the urban context. They perform numerous other functions such as water conservation, biological reproduction, carbon fixation, oxygen release, and biodiversity conservation, as well as social and economic functions (Wang et al., 2023; Arif et al., 2021). With the growth of the river's ecological infrastructure, the sustainability of the regional socio-ecological system is enhanced and potential social hazards are prevented (Surenkhorloo et al., 2021; Tang & Ding, 2020), which can also be effective in citizens' perception of the river's place in the city's ecosystem and its development. Landscape ecology is a scientific field that studies and improves the relationship between spatial patterns and ecological processes (Wu, 2013). From this perspective, the river is not merely a linear element but a living network that shapes the city's spatial structure in interaction with the land's natural logic. Therefore, the river can shape the spatial organization of the bed by influencing the network of passages, the pattern of use, and the distribution of urban open spaces, all of which are directly connected to the river's path, slope, and flow.

In this framework, the river, as bio-ecological infrastructure, provides a basis for understanding the city not simply as an artificial structure but as a living and developing system. A system in which urban life depends on the continuity of water flow, continuity, and networking. This reading provides the necessary context for moving beyond reductionist approaches to the river and toward a conceptual understanding of the water city as a continuous, networked relationship among the city, water, and people.

• River and landscape perception

The process of perception of the landscape is the product of human experience in space, an experience in which natural and artificial elements simultaneously contribute to the formation of the mental image of the environment. This perception results from the dynamic interaction among humans, space, and meaning. It is not limited to the objective and physical dimensions of the place. Still, the mental parameters of the landscape are crucial in shaping perceptions of space, thereby enabling the semantic quality of space to emerge for

[Downloaded from jors-sj.com on 2026-11-08]

[DOI: 10.22034/3.8.6]

humans and the place to emerge. The river is one of the most important environmental spaces in which the effects of history are visible in its remains and, as a stable natural element within the city's structure, helps organize citizens' perceptions of the city. Spatially, it is a linear, continuous, and directional element and plays a central role in the legibility of the city, in a sense, adding the city to its subset. Lynch (1960) introduces rivers as edges and, at the same time, as perceptual axes of the city; Elements that not only create spatial boundaries, but also enable orientation, organize movement, and form a coherent mental image of the city. As a result, the river, as a perceptual reference, also organizes the spatial experience of citizens.

• River, meaning, and collective memory

Rivers have played a significant role in shaping citizens' attitudes toward the river by providing opportunities along their banks and corridors that create social, economic, and ritual opportunities. Providing drinking water, irrigation of agriculture, and holding official/local ceremonies on the river banks are among the most basic aspects of the coexistence of the river and the city that are compatible with the physical aspects of the river. Other potential capacities can also be considered for the river, such as the ability to create an edge (Lynch, 1960) between different neighborhoods and regions, and a boundary for the city, and also providing security aspects, which in the contemporary period has been reduced to a single spatial element within the city with the expansion of urban development plans. The river is not only a spatial element in the city, but it also manages the organization of urban structures and components by expanding from the initial core of the city and forms the identity basis of places with physical-spatial events on the sides and corridors, and through different historical periods, and as a result of the synthesis of the thoughts of citizens and experiencers. Urban edges are among the primary elements that introduce the city to the audience's mind (Yarahmadi, 2010; Zahraeipour & Jafarpoor, 2021), thereby establishing a semantic connection among the city, humans, and natural elements. The river, with its semantic, identity, functional, and historical potential, can become a place; therefore, the place is a kind of landscape. The river is also a landscape and carries the collective memory of generations.

Summary

Summary of research components (Fig. 4).

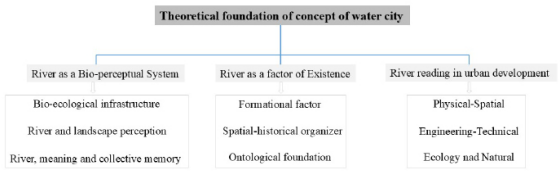


Fig. 4. Summary of research components.

• Water City: A Conceptual Rethinking of the relationship between city and water

Contemporary approaches to urban development have provided definitions of the relationship between water and the city, but these results have generally not led to a holistic, integrated reading. These results are the result of prioritizing purely formative ideas, green-blue infrastructures, and meaning, and can be considered to derive from one-dimensional, detail-oriented approaches. One-dimensional ideas have impeded the convergence of diverse ideas toward a single pattern in the urban development process, as articulated in this speech through the concept of "water city". Water city, as a theoretical concept, does not seek to supplant other approaches; rather, it aims to foster conceptual convergence across disciplines and, through a detail-oriented approach to the relationship between water and the city, to identify shortcomings that do not lead to interdisciplinary coherence. For this reason, no model has been developed to address current environmental challenges in river planning and management. Therefore, it is necessary to conduct a deep reading of the relationship between the river and the city by adopting a multi-layered approach comprising four levels: city development factor, biological-ecological infrastructure, perceptual-semantic organizer, and collective memory. The concept of the water city encompasses not only ecological, infrastructural, engineering, and technological approaches but also meaning, mental models, hydrology, and history. Water City is a model that, from an island perspective, provides a holistic framework for assessing the impacts of all layers involved in the coexistence of the river and the city. In this speech, "water city" is not only a physical model or an approach to design, but is defined as a conceptual framework for understanding the relationship between water and the city; a framework in which the river is not only a natural or infrastructural element, but is considered a productive factor in the spatial organization, biological system and semantic structures of the city. The river shapes the city's identity, elevating it from the physical body of the earth to the concept of land. The river, in parallel, has formed a multilayered, holistic relationship with the city that encompasses various developmental, ecological, perceptual, and social dimensions.

Accordingly, the water city is not an abstract concept, but an analytical framework for reading Iranian water-based cities. In the continuation of this framework, a city founded on water (the permanent river of Babolroud) is examined to analyze how the layers of the water city manifest in the spatial organization of the urban landscape and in the lived experiences of citizens.

Findings

• Evaluation of the landscape of Babol within the framework of the concept of the city of water

In this research, the concept of the city of water is reinterpreted as three main components within the structure of landscape ecology.

• Reading the relationship between the river and the city

• The river as a factor in the development of spatial structure

[Downloaded from jors-sj.com on 2026-11-08]

[DOI: 10.22034/3.8.6]

• The river as a biological-perceptual infrastructure

- Reading the relationship between the river and the city of Babol

Reading the landscape of the city of Babol cannot be separated from its natural and hydrological structures. A city with a minimum longitudinal slope, between two rivers flowing from south to north, and in an area safe from the risk of flood destruction, has been formed. Historical accounts of the city of Babol indicate that the river has played a significant role in the city's spatial and security infrastructure from its inception. Its effect is also evident in the city's name: Babol refers to the largest and most important river that flows along the city's western front and has formed the city's border and that of other neighborhoods. This influence has been evident across various historical periods, such that the river's connection to the Caspian Sea contributed to increased economic activity, trade prosperity, and the development of maritime activities in Babol, and "Barfurosh" or "Barfurosh-deh" was the name applied to this city.

Today, with the city's expansion and the spatial development of residential areas, Babolroud is no longer the urban border and edge of Babol, but rather traverses various urban neighborhoods. An axis with a constant flow of water and trees reaching to the sky in its boundaries, which is still noticeable in proportion to the city, and keeps the axis of life alive in the neighborhoods. While in the master plan 2000 of Babol city, Babolroud is not only the axis of life, but also a drainage for collecting surface water and urban sewage. The life of this green-blue axis (Babolroud River) is a response to the flow of life in the city, which is manifested as a center of activities, communities, and also the leisure of citizens who are far from nature in the process of urban life. In addition to serving as a place for leisure and relaxation for citizens, the river can also participate at the macro-environmental level and function as the city's respiratory lung, effectively transferring north-south flows, and managing the region's per capita green space. These contributions are highly effective in enhancing urban livability and thermal comfort for residents across diverse urban areas and in transforming the river-city relationship from two separate spatial elements into an existential and identity-creating process.

- River and city: a formative factor of the city based on the Babolroud River

The Babolroud River originates from the heights of the central Alborz, passes through the upstream areas of Bandpi and Savadkouh, enters the fertile plains of Babol, and forms the western edge of the city. The permanent river is one of the most important environmental substrates in the region and a factor in the survival of human, plant, and animal habitats. The city, as the first civilized human habitat, was formed in this area between the two rivers Babolroud (west) and Agharoud (east). (The shape of the city) The choice of its initial core at a high point and at a reasonable distance from the two rivers indicates the historical understanding of the inhabitants of the behavior of the river and its flood hazards; an event that indicates the presence of the river as a decisive factor in the development of the city. In addition, the city's location between these two rivers may reflect a defensive posture intended to protect the population from attacks by other tribes. In the city's development process, attention to its spatial organization is crucial. The name of the city (Barfurosh) can be considered the result of the influence of natural logic on the lives of the people. Babol was the principal provincial sales center, and its economic system was also established within the city's old market. In such a way that the market is not only an economic element, but also part of the spatial system formed in relation to the river. (Bazaar Shape) The Wednesday bazaar, Thursday bazaar, Straw sellers bazaar, and Chale bazaar are among the oldest markets in the city and formed the city's physical-spatial organization along the river (Fig. 5).

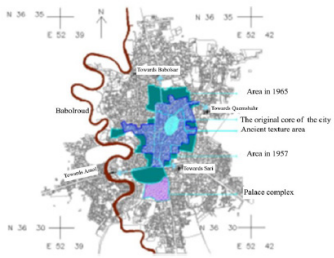


Fig. 5: Map of the city of Babol, different periods of the city's expansion, and its relationship with the Babolroud. Source: Heydarizade Shali, 2022.

- Babolroud as a city's bio-perceptual infrastructure

Based on the geological structure, the city of Babol has a slight slope, less than 1 percent (Heydarizade Shali, 2022). The geological structure of Babol reduces river flow velocity in this area. The many bends of the river in this area are evidence of the low speed of the river flow. The slow and constant flow of water is a factor that has become a factor of stable hydrological conditions; conditions that are considered a safe bed for water activities, irrigation of agricultural lands, and even spawning of native aquatic animals and the continuation of the biological cycle. A stable water bed, along with suitable vegetation, has created a biological basis for life for plant, animal, and migratory bird species. This biological continuity has transformed the river into a trans-regional bio-ecological corridor that effectively micro-regulates the climate, purifies water, stabilizes soil, and increases biodiversity within the city. These features indicate that this river is not merely a waterway but a living, life-generating system with a dynamic nature and processes that sustain life.

The connection with agricultural lands reveals another dimension of the Babolroud's infrastructural role. By supplying local water resources, such as dams and wetlands, the river plays a significant role in sustaining agricultural activities across seasons. As a natural border between the urban fabric and agricultural lands, the river establishes a connection between the flow of water, the livelihood of residents and the urban economy, and causes the river's biological system to

[Downloaded from jors-sj.com on 2026-11-08]

[DOI: 10.22034/3.8.6]

be intertwined with the city's production and spatial system; a relationship that has supported the city's daily markets from the past to the present and has led to the city's economic dynamism. Therefore, Babolroud functions as bio-ecological infrastructure, not only as a water corridor around the city but also as a support system for urban life. This river plays a significant role in the sustainability of the livability of the city of Babol through its connection with ecology, livelihood, space and movement, and has a higher status than an environmental issue or urban drainage, and can be considered as one of the main pillars in realizing the concept of the city of water in the context of the city of Babol, which has also been intertwined with the lives of the people of Babol.

With its constant flow of water, the Babul River is a linear, continuous, and directional element that passes through the city, effectively organizing the perception of the urban landscape. As it was in the past and alongside its agricultural potential, it was the center of the "Mithra" cult. A cult that was interpreted as the goddess of sustenance. This cult was not the only official religion in the region. Still, it was the primary basis for the formation of urban identity, so that for many centuries the city was known as Mamtir, or the moon of Mithra (HeidarNattaj, 2017). Along the river, bridges are effective in creating urban signs for readability and urban perception. As one of the oldest river crossings in the region, the Mohammad Hassan Khan Bridge is an urban landmark in the field of place construction that plays a vital role in shaping citizens' perceptions. In addition, the river's morphology has created rich social, leisure, and aesthetic possibilities. A form that creates two different edges at the bends and, in addition to access to water, is also a landmark for citizens to enjoy the beauty of the river, which provides a safe point and a reasonable distance to watch the river flow in different seasons. This potential prevents the river from being reduced to an unsafe urban area in the middle and allows for its continued use.

In this framework, Babolroud is not only a natural element on the city's outskirts but also an active perceptual axis that organizes the mental image of the city of Babol and constitutes a fundamental layer of the city's concept in its perceptual and experiential dimensions.

Conclusion

This study shows that, by examining the various dimensions of the relationship between the city and water, the concept of the water city cannot be reduced to the presence of water physics, ecological functions, and infrastructural dimensions. The concept of the water city is the result of multilayered interactions among water, the city's spatial structure, biological systems, human perception, semantic dimensions, and collective memory. The case study of the city of Babol has shown the fundamental role of the Babolroud River in the formation of the city's initial core, the orientation of spatial growth, and the development of livelihood systems, which remain active bio-ecological infrastructure in urban life.

The analyses indicate that, during contemporary development, the perceptual and semantic layers of the water city in Babol have gradually deteriorated. Applying purely ecological and engineering approaches to the river in the urban planning process, even when aimed solely at reducing environmental risks, by reducing the river to a mere functional corridor for urban drainage, has led to the neglect of the perceptual, social, and identity links between citizens and the river. This research shows that a purely ecological view, by ignoring the mental, experiential, and cultural dimensions of the landscape, is unable to revive the relationship between the city and the river fully. As a conceptual framework, the water city emphasizes the necessity of simultaneously rereading the developmental, bio-ecological, perceptual, and semantic layers. It provides a basis for designing and recreating riverside landscapes in Iranian cities.

Finally, it can be said that the realization of the water city in Babol is possible not by eliminating ecological interventions, but by completing it through the reconstruction of the perceptual and semantic links among the city, the river, and the citizens.

Conflict of Interest

The authors declare that there was no conflict for them in conducting this research.

References List

- Abdi, B., Rezaei, Z., Nosratian, R., & Mehrabadi, M. (2024). Exploring the Place-making Role of Native Green Landscapes in Urban Landscape Development (Case study: River Cities of Dezful, Shush, and Shushtar. *Journal of Revitalization School, 2* (4), 30-37. https://doi.org/10.22034/2.4.30
- Allan, J. D. (2004). Landscapes and riverscapes: the influence of land use on stream ecosystems. *Annual Review Ecology, Evolution, and Systematics, 35* (1), 257–284. https://doi.org/10.1146/annurev.ecolsys.35.120202.110122
- Arif, M., Tahir, M., Jie, Z., & Changxiao, L. (2021). Impacts of riparian width and stream channel width on ecological networks in main waterways and tributaries. *Science of the Total Environment*, 792, 148457. https://doi.org/10.1016/j.scitotenv.2021.148457
- Atashinbar,M. (2009). The Continuity of Identity in Urban Landscape. *Bagh-e Nazar, 6*(12), 45-56.
- Bennett, E. M., Peterson, G. D., & Gordon, L. J. (2009). Understanding relationships among multiple ecosystem services. *Ecology letters, 12*(12), 1394-1404.
- Capon, S. J., Chambers, L. E., Mac Nally, R., Naiman, R. J., Davies, P., Marshall, N., ... & Williams, S. E. (2013). Riparian ecosystems in the 21st century: hotspots for climate change adaptation?. *Ecosystems, 16*(3), 359-381. https://doi.org/10.1007/s10021-013-9656-1
- Forman, R. T. (1995). *Land mosaics: the ecology of landscapes and regions*. Cambridge University Press.
- Haeri, S., & Masnavi, M. R. (2023). Analyzing and Developing Strategies for the Ecological Restoration of Urban Rivers in the Framework of Ecological Urbanism. *MANZAR, the Scientific Journal of Landscape, 15*(62), 54-71. https://doi.org/10.22034/manzar.2023.356492.2204
- Hauer, F. R., Locke, H., Dreitz, V. J., Hebblewhite, M., Lowe, W. H., Muhlfeld, C. C., ... & Rood, S. B. (2016). Gravel-bed river floodplains are

[Downloaded from jors-sj.com on 2026-11-08]

[DOI: 10.22034/3.8.6]

the ecological nexus of glaciated mountain landscapes. *Science Advances, 2*(6), e1600026. http://doi.org/10.1126/sciadv.1600026
• HeidarNattaj, V. (2017). The Role of Landscape Elements (Water and Geographic Context) in the Configuration of Bahrol-eram Garden. *Bagh-e Nazar, 14*(54), 5-20.
• Heydarizade Shalli, M. (2022). *The effect of landscape ecological parameters on increasing the environmental and social sustainability of riverside landscapes; (Landscape design of the outskirts of Babolrood in the area of Mohammad Hassan Khan Bridge to Moziraj Bridge)* [University of Tehran, Master Thesis].
• Katusiime, J., Schütt, B., & Mutai, N. (2023). The relationship of land tenure, land use and land cover changes in Lake Victoria basin. *Land Use Policy*, 126, 106542.. https://doi.
• Kostof, S. (1991). *The City Shaped: Urban Patterns and Meanings Through History*. Thames and Hudson.
• Li, L., Yang, D., Wang, X., Meng, C., Lu, Y., & Gao, C. (2025). Exploring urban waterscape perceptions: relating landscape visual character and landscape image through a multi-perspective approach. *Journal of Outdoor Recreation and Tourism, 52*, 100977. https://doi.org/10.1016/j.jort.2025.100977
• Lynch, K. (1960). *The Image of the City*. MIT Press.
• Maghsudi, A., Sarajian Nami, M., Tavakkoli Farimani, M., Nazari, Z., Haj Abdolbaghi, F., Motemasek, F., & Mojtabavi, K. (2020). City image: a reflection of urban identity, an investigation about the relationship between urban image and identity in the historic tissue of Gorgan. *Journal of Art and Civilization of the Orient, 8*(27), 67-76. https://doi.org/10.22034/jaco.2020.217716.1141
• Majidi, M., Mansouri, S. A., Sabernejad, J., & Barati, N. (2019). The Role of Landscape Approach in Improving Satisfaction with the Urban Environment. *Bagh-e Nazar, 16*(76), 45-56. https://doi.org/10.22034/bagh.2019.183817.4091
• Masnavi, M. R., Tasa, H., Ghobadi, M., Farzad Behtash, M. R., & Negin Taji, S. (2016). Restoration and Reclamation of the River Valleys' Landscape Structure for Urban Sustainability using FAHP Process, the Case of Northern Tehran- Iran. International *Journal of Environmental Research, 10*(1), 193-202. https://doi.org/10.22059/ijer.2016.56901
• Mumford, L. (1961). *The city in history: Its origins, its transformations, and its prospects* (Vol. 67). Houghton Mifflin Harcourt.
• O'Hanley, J. R. (2011). Open rivers: barrier removal planning and the restoration of free-flowing rivers. *Journal of environmental management, 92*(12), 3112-3120. https://doi.org/10.1016/j.jenvman.2011.07.027org/10.1016/j.landusepol.2023.106542.
• Petersen, C. R., Van Deventer, H., Smith-Adao, L. B., & Nel, J. L. (2023). Incorporating free-flowing rivers into global biodiversity targets: Prioritization and targeted interventions to maintain ecological integrity. *Aquatic Conservation: Marine and Freshwater Ecosystems, 33*(1), 115-128. https://doi.org/10.1002/aqc.3898
• Schilling, O. S., Cook, P. G., Grierson, P. F., Dogramaci, S., & Simmons, C. T. (2021). Controls on interactions between surface water, groundwater, and riverine vegetation along intermittent rivers and ephemeral streams in arid regions. *Water Resources Research, 57*(2), e2020WR028429. https://doi.org/10.1029/2020WR028429
• Singh, R., Tiwari, A.K., & Singh, G.S. Managing riparian zones for river health improvement: an integrated approach. *Landscape Ecol Eng 17*, 195–223 (2021). https://doi.org/10.1007/s11355-020-00436-5.
• Spirn, A. W. (1984). *The Granite Garden*. Basic Books.
• Surenkhorloo, P., Buyanaa, C., Dolgorjav, S., Bazarsad, C.-O., Zamba, B., Bayarsaikhan, S., & Heiner, M. (2021). Identifying Riparian Areas of Free Flowing Rivers for Legal Protection: Model Region Mongolia. *Sustainability, 13*(2), 551. https://doi.org/10.3390/su13020551
• Tang, Q., Ding, S. (2020). Multifunctional agricultural landscape: concept, progress and study paradigm. *Acta Ecol. Sin, 40* (13), 4689–4697.
• Wang, J., Ma, Z., Wang, Z., Huang, X., Hou, Q., Cao, Y., & Wang, W. (2023). Evolution of the landscape ecological pattern in arid riparian zones based on the perspective of watershed river-groundwater transformation. *Journal of Hydrology*, 625, 130119. https://doi.org/10.1016/j.jhydrol.2023.130119
• Wang, Z., Wang, W., Zhang, Z., Hou, X., Ma, Z., & Chen, B. (2021). River-groundwater interaction affected species composition and diversity perpendicular to a regulated river in an arid riparian zone. *Global Ecology and Conservation, 27*, e01595. https://doi.org/10.1016/j.gecco.2021.e01595
• Ward, J. (1998). Riverine landscapes: biodiversity patterns, disturbance regimes, and aquatic conservation. *Biological conservation, 83*(3), 269-278. https://doi.org/10.1016/S0006-3207(97)00083-9
• Wu, J. (2013). Landscape sustainability science: ecosystem services and human well-being in changing landscapes. *Landscape ecology, 28*(6), 999-1023. https://doi.org/10.1007/s10980-013-9894-9
• Yarahmadi, S. (2010). Surveying the role of edges in the realization of landscape goals. *MANZAR, the Scientific Journal of landscape, 2*(11), 30-37.
• Zahraeipour, N., & Jafarpoor, R. (2021). The Status of the River Valleys of Tehran as the Most Important Natural Edges of the City in the High-Level Document (Comprehensive plan) of the City. *Bagh-e Nazar, 18*(97), 5-16. https://doi.org/10.22034/bagh.2020.195110.4234

COPYRIGHTS
Copyright for this article is retained by the authors with publication rights granted to Revitalization School journal. This is an open access article disributed under the terms and conditions of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/).

HOW TO CITE THIS ARTICLE
Heydarizade Shalli, M., Haghir, S., & Heidar Nattaj, V. (2025). "Water City" River and the Being of the City; Conceptual Rethinking of Water City in the Framework of Landscape Ecology (Case Study: Babolroud River). *Journal of Revitalization School, 3*(8), 60-67.
DOI: http://doi.org/10.22034/3.8.6
URL: https://jors-sj.com/article-1-71-en.html

[Downloaded from jors-sj.com on 2026-11-08]
[DOI: 10.22034/3.8.6]