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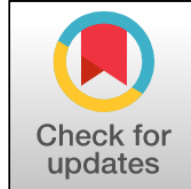
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Urban Rivers: Catalysts for Sustainable Cityscapes

Sungai Perkotaan: Katalisator untuk Lanskap Kota yang Berkelanjutan

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Abstract

This study investigates the impact of urban rivers on city identities, focusing on their dual nature as both natural and constructed elements. By applying Kevin Lynch's theoretical framework to riverfronts in Iraq, we uncover how these areas, despite their strategic importance, are often overlooked in urban planning. Our methodology combines a literature review with a case study analysis to explore the distinctive attributes of riverfronts that contribute to the mental image of cities. The findings reveal that riverfronts not only enhance the visual and experiential quality of urban environments but also suggest that they could serve as key components in strategies aimed at improving urban sustainability and quality of life. This research highlights the potential of riverfronts to transform urban planning paradigms, emphasizing the need for greater integration of these spaces in city development initiatives.

Highlights:

- Riverfronts blend natural and urban elements, shaping city perceptions.
- Often neglected, riverfronts hold central economic potential.
- Strategic enhancement improves sustainability and urban quality of life.

Keywords: Urban Sustainability, Riverfront Development, Mental Image, Urban Planning, Environmental Design

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Introduction

Riverfront means the urban piece of the city connected to the river or any body of water within the city, and the riverfront provides the shortest way to connect the city with water and is the front gate for any city to express its mental and visual image [1] Riverfront areas must be characterized by the full activity of infrastructure and can be described as a large area of communication between the urban expansion of the city and water. [2] The riverfront is the interaction between local communities and the river, provides interface development River within the city Opportunity for entertainment Providing cultural events, and helps to communicate between people and recreation for local communities In addition, the interface can be defined as River as part of the city or city adjacent to a river, also as an area of interaction between urban development and water [3].

The research is conducted to clarify the concept of the riverfront, which is a pattern or context of the city's urban fabric overlooking the river and often has a linear shape and is affected by the shape of the river often, which is linear, and to indicate their importance in affecting the mental image of the city, according to Lynch (1960) which shows that the riverfront is a linear and longitudinal element of the city and connects the land with water and has the largest role in achieving visual coherence and continuity of movement between the two sides of Nahrawan Development and planning must be done in a comprehensive and integrated system at the city level in order to integrate with the rest of the city's fabric and work to develop it, as well as between Lynch(1960) Five elements in order to form the mental image of the city within the mind of people and they are (landmarks - Edge - Tracks - Sectors - contract) and these elements have a great role in drawing the mental image of the city [4]

Therefore, this paper examines the importance of the role of the riverfront and the river in drawing and enhancing the image of the mental city through Clarifying the importance of the riverfront and the basic principles for its development and the statement of the elements of the mental image of the city and how the river and the riverfront affect the enhancement of the mental image of the city through the statement of a measurement ruler showing that the river and the riverfront have hybrid characteristics of the mental image characteristics and the study aims:

- a. Explaining the concept of the riverfront through the literature and architects who dealt with it.
- b. Statement of the most important design indicators for the development of the riverfront
- c. Explanation of the characteristics of the mental image of the city
- d. Explaining the importance of the river and the riverfront in enhancing the mental image of the city

A. Theoretical Framework

a. River and City

Rivers are often described as the circulatory system of the earth and have a great benefit to the environment and society within the city because of their distinctive characteristics and have a great impact on the formation of the city [5] In addition to the social, environmental, economic, and cultural characteristics and advantages it provides, it represents an important part of the mental image of the city, and the riverfront is not limited to just a façade between the built urban structures and the river, but it has a major role in social events, as it is characterized by many unique elements related to social and community life, moreover, the riverfront is the urban heart of the city and represents places to connect the land to the river and attracts residents naturally [6].

The river and river façade play a very important role in drawing or enhancing the general urban images of the city and the mental image of the city in particular, and the boundaries of the riverfront area are not specifically clear, as it is seen and a close contact area with the river and its neighboring urban areas within the fabric of the city, as well as there must be communication between it and the parts of the city and not to create separation elements such as infrastructure and transportation. A long period (from the beginning of the city's residential settlements to the industrial character dedicated to transporting goods and then to their rediscovery and human-friendly reuses) is seen as a collection of collective accumulations of the experiences of many generations [7].

Therefore, the development of the riverfront and the river is linked to many challenges of vegetative planning by developing them as high-quality public spaces to preserve them and their historical identity and enhance the mental image of the city with its distinctive qualities in an impact on the mental image of the city.

b. River Front

Literature Review

Many studies, literary works, and different disciplines have dealt with the concept of the riverfront, which can be defined linguistically as "Its parts. Who is it Geographically connected cities By the river" [8]. It is considered a distinctive resource for the city where natural and industrial elements and humans meet and represent the magical point of the city and consists of three parts (the edge of the river - Urban Green Path - Development Zone) [9] As

Figure1

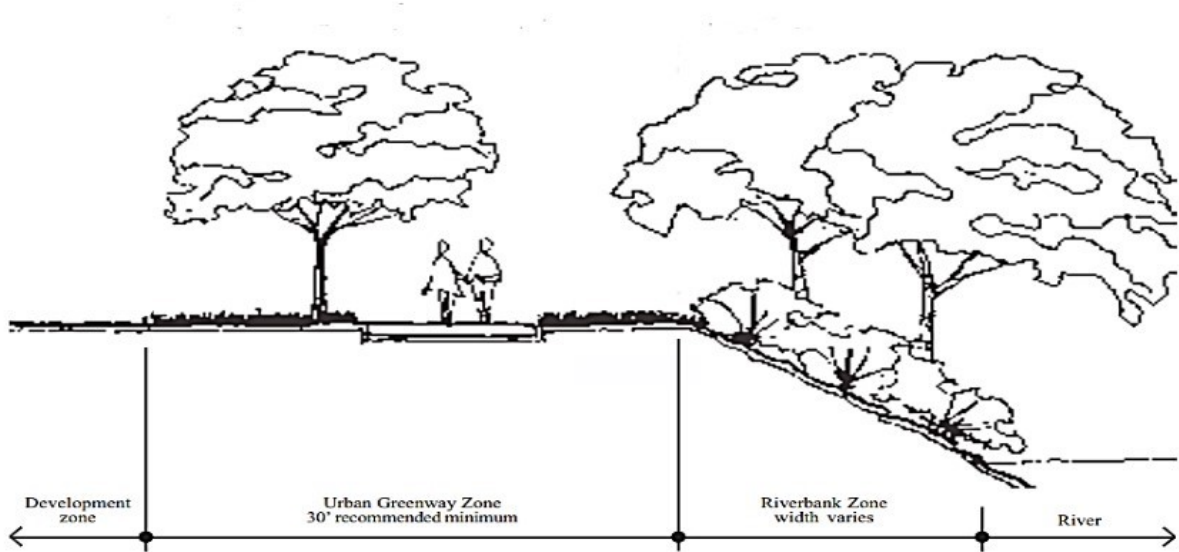


Figure 1. *The Three Parts of the Riverfront*

The riverfront was defined by many literatures and architects, as shown in Table 1.

Name of the study or researcher	Definition of riverfront	Years
Lynch	They are linear and longitudinal elements and are the part that connects the city or land with the river and achieves visual connectivity and continuity of movement between the two sides of the river as the river divides the city into two parts that the process of visual linkage and the continuity of kinetic or visual communication is through perspective or Totalitarian regime at the city level and is affected in its planning and design by everything that surrounds it and also affects the planning of the city and its urban fabric[10]	1960
Breen	A border or edge in cities, and their planning, design, and development shall be in one configuration and shall not be done by chance or in unstudied ways, but by a comprehensive and studied plan by all relevant authorities, including owners or responsible authorities, and to achieve best Benefit to the city and the population and the buildings in it may not overlook the river directly but are linked to it visually and historically or be within the city's grand plan that overlooks the river[11]	1994
Rethinking Urban Waterfront as a Potential Public Open Space	The riverfront is defined as A piece of land or part of a city next to and bounded by a river from two sides, an urban riverfront can include any	2020

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	<p>urban area overlooking or adjacent to a river. The riverfront of the vibrant public city and the vitality of being Gives great value to the city It helps shape its identity and urban landscape. I Reached Cities around the world that enjoy views of the ocean, bay, or river to One principle he The more the audience reaches From residents of the city or tourists to the riverfront - increased its value as well as the value of special areas On the riverfront [12]</p>	
Urban Design and the Bottom Line	<p>The riverfront in the city is The urban area overlooking and formed by the river and owns Unique qualities and a unique place in the city characterized by the character of linearity and continuity of the spaces confined between the two banks of the river[13]</p>	2008
The Edinburgh Standards for Urban Design	<p>The riverfront in the city is The urban area overlooking and formed by the river and owns Unique qualities and a unique place in the city characterized by the character of linearity and continuity of the spaces confined between the two banks of the river[13]</p>	2003
The study of the use compatible with the beach facades	<p>It is that urban area that is characterized by visual continuity and openness and communicates with the rest of the urban parts For the city, It is important because it constitutes the first visual impression of the city and has a distinct recreational atmosphere of events and because of the spaces it provides that improve the environment, entertainment and public spaces for all population, and be an area High attraction and provide connectivity and sense of human scale and place [14]</p>	
Urban Waterfront Lands	<p>The riverfront in terms of uses and its importance, where scattered uses lead to significant economic losses and the extinction of the riverfront, if properly exploited in terms of land uses such as (recreational, cultural, commercial..) will return a great economic return when the façade has excellent visual vision and openness to the river through open spaces or facades of buildings overlooking the river, and for this the uses of the land are important in achieving openness and visual vision through the facades of buildings, axes or open spaces (such as squares). Or parks or gardens public) [15]</p>	2022
	<p>riverfront in terms of uses (recreational, cultural, and social...) To achieve the highest benefit from the river and directed towards the river and through buildings</p>	1980

	<p>overlooking it or urban spaces overlooking the river or axes of movement, as well as easy access to the river by residents and tourists from outside the city As well as the importance of studying the uses that are placed on the river[16]</p>	
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Table 1. Review the Concept of the Riverfront in Similar Works and Studies

B. Time Stages of the Development of Riverfronts

Rivers are a close relationship between them and the city and are an integral part of our civilization and are considered one of the most important natural resources, and the riverfront area is the most attractive place in the city and therefore most important public places are located near the river, moreover, Most countries developed an area next to the river earlier than the interior of the city. The riverfront area is considered a center in many cities that have a river passing within it, as it has been established historically as a commercial center, transport hub, or production center, and the quality of the event is related to the city's location, nature, and topography [17].

Wrenn introduced four stages that can be applied to any riverfront, representing its chronological development As in Table 2

Stage	Phase description
The emergence of riverfront cities	At this stage of development, the riverfront was just a few roads converging at the pier. Settlements were closely linked to water and land borders; riverfronts played an important role in meeting human needs, trade, and water transport. The rapid development of the community in the riverfront area has led to the beginning of urban development.
Growth of riverfronts	At this point, the settlement developed on the riverfront, and the area became a busy commercial space that finally turned into a city. Buildings appeared along the riverfront, and warehouses usually blocked access to water from the streets. By expanding the port area towards water to increase mooring and storage areas, the city center became much farther away from the riverfront. Different modes of transportation have emerged from river transport but the riverfront has become crowded because of the larger space needed by the railway. The state of the environment on the riverfront and the water began to deteriorate due to industrial pollution. The riverfront began to lose its natural attractiveness.
Riverfront degradation	With changes in container and shipping technologies, improved transport infrastructure (highways), and the development of new ports outside urban boundaries, native ports began to lose their role as transport and industrial hubs, and people began to prefer highways to railways because of the freedom of choice and accessibility provided by the former. Another factor contributing to the rendering of ports obsolete and the decline of riverfronts is the increase in public awareness of environmental issues and restrictions on air and water pollution. The riverfront was It became a boring, inaccessible, and dangerous area, further separating the nucleus of the city from the water. Top of Form
Rediscovering the riverfront	Since the sixties of the last century, many cities have decided to restore the aesthetic landscape of the riverfront that has been damaged over the years. Opportunities to reconnect the riverfront to the city center to create public-purpose spaces are beginning to emerge. Mixed-use functions, such as recreational, residential, and commercial, began to emerge in the riverfront area, as a result of which many spaces returned to public use. At the same time, new container

ports were established outside urban boundaries, where sufficient space was available. Through Changing the functions of riverfronts, people began to form a relationship with these places; riverfronts became promoted, and their social meanings changed Top of Form

Table 2. *Stages of Development of the Riverfront*

C. Design Indicators of the Riverfront

1. Land Uses

There are several uses related to the land within the riverfront, preferably available to increase the effectiveness and value of the riverfront, as well as to increase human communication with the river and link the parts of the city to the river as follows:

- a. Recreational use: The riverfront is the main outlet for residents within the city, and recreational activities and events must be available on it
- b. Cultural use: The riverfront is suitable for holding many events adjacent to the river, such as libraries, exhibitions, or any other event
- c. Commercial use: It is a distinctive commercial destination for holding commercial events taking into account public spaces
- d. Multi-purpose use: In recent years, the term versatility has emerged to make the most of the land, and the riverfront is one of the most suitable places to apply this event.
- e. Residential Use: The riverfront is a magnet for some distinctive residential projects

Here it is clear that the use of land for the development of the riverfront [18]

2. Urban and Optical Permeability

The term permeability means the accessibility or ease of access to the river as well as ease of movement within the urban area (riverfront). Where the built environment and the urban composition of the urban area have an important role in the degree of access to the river or ease of movement within it. Wan for riverfront buildings A major role in strengthening or weakening permeability at the urban or visual level, where attention must be paid to its sizes, length, method of distribution, and degree of adhesion, whenever Increasing the height of buildings or their adhesion isolates the river from the city [19].

3. Visual Vision

The most important thing to provide and achieve is a successful visual view of the river, which is considered the most distinctive space in the city It differs from the rest of the city's spaces, which makes the design of paths and angles of view towards the river and the exploitation of all elements and design and functional solutions to achieve the maximum benefit from the river and the possibility of visibility available to all. pioneers, Where the possibility of the quality of spaces, buildings, and events by exploiting the possibility of overlooking the river and achieving the possibility of visibility of the river, which affects the increase in the quality of the city and its activity It can be achieved by paying attention to the design of Skyline of the riverfront, which is the most prominent feature of the riverfront and mainly affects the mental and visual image of the city[20] As shown in Figure 2



Figure 2. *Manhattan Skyline*

4. Riverfront Character

The riverfront is one of the most visually and visually affected places Its spaces and buildings and a degree of regularity and consistency, and there are two types of architectural beauty, the first is related to the individual building itself, and the second is the relationship of each building with neighboring buildings and surrounding spaces, as the nature of its formation and integration with the spaces in it will allow it to be seen in a group and not separately So that there is a ratio between the spaces and the buildings so that the façade is not a forest of concrete buildings where the spaces allow easy access to the river and enjoy it as a public property And from multiple angles[] The world's largest cities are characterized by their riverfronts with their unique character[] The combined riverfront is one of the most prominent components of the mental and visual image, as the buildings of the riverfront represent the walls of urban spaces. In the riverfront The concept of the unified riverfront was associated with the term character, which is now a symbol of the civilizational progress of the city and strengthens the belonging between the residents and the city giving a sense of uniqueness and privacy, and making it a clear and readable environment for Pioneers The character of the riverfront can be the first attraction. [21] The character is divided River Front Into three levels:

a. Architectural Character

It is the outcome of the external formation of the prevailing buildings and deals with the level of buildings individually and isolated from the rest of the buildings within the urban area.

b. Urban Character

It is the result of the characteristics resulting from the external formation of a group of buildings, paths, urban spaces, and the natural environment, and focuses on the relationship between buildings and surrounding spaces and the elements of their coordination.

c. General Character

It is the result of future perceptions through the human senses and what he sees about it and sees that the character of the riverfront can be analyzed by identifying the elements of the character to make it harmonious and visually balanced.

5. Riverfront Landmarks

When designing the riverfront as a whole, attention should be paid to the distinctive visual features, as these contribute to remembering the place and directing movement in it, and attention to distinctive landmarks is necessary when developing any riverfront, due to the distinctive and unique characteristics of these landmarks and are a source of inspiration and creativity. According to Gordon Cullen G., The distinctive landmarks are called (visual attraction points), where it says that the distinctive landmarks must force the viewer to stop to see them and be characterized by anchorage and emphasize centrality [22]He says Lynch The landmarks depend in their perception on their simplicity and formal clarity, and the degree of contrast with the background in which they are located, and it is possible to have unique architectural buildings, natural elements that become landmarks and very distinctive buildings on the riverfront that are distinct landmarks and of two types:

a. Historic buildings

Buildings that acquire their value from a certain era of time, architectural style, important figure, or important events such as the Taj Mahal in India.

b. Modern buildings

They are buildings that gain their distinction from their difference with the urban environment in their composition, height, and architectural orientation, such as the Central Bank of Iraq [18] As in the figure 3

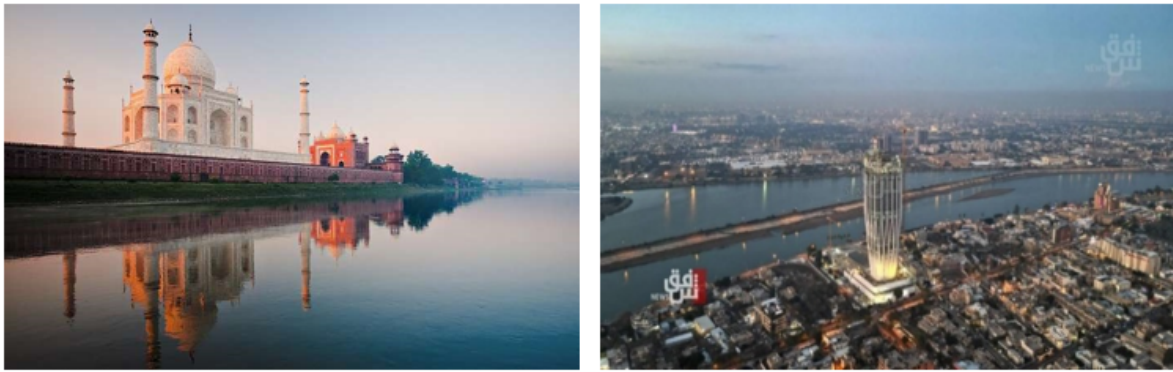


Figure 3. Central Bank of Iraq Building and Taj Mahal Palace in India

6. Design Elements of the River Facade

River facade efficiency depends on design criteria Its spaces and facilities which Include (Functional Criteria and optical) where it includes Functional Criteria it is (Foundations and characteristics that should be acquired in order to achieve its own functionally And be inclusive of all users and must be the space or creator Comfortable for users in terms of lighting and misguidance and ventilation) Either Visual Standards They are (elements related to the visual aspect and how they are formed within space and define space boundaries) and elements of space coordination It includes (space floor - plant elements - seating areas - lighting units - distinctive landmarks - separation elements - guiding signs - entrances to spaces - user services for space) To achieve the best efficiency of the river front, the opinion of its users and stakeholders (private or public sector) must be taken when developing or planning it, with a statement of the opinion of specialists as architects or planners.

Table 3 summarizes the most important basic vocabulary of the design indicators of the riverfront and the following:

Design Indicator	Vocabulary for Design Indicators
Land Uses	Multi-use (mixed-use)
	Single-use (residential - recreational - cultural - etc.)
Urban and Optical Permeability	Accessibility (safety of traffic corridors - furniture - separation of means of transport)
	Ease of access (clarity of movement paths - urban spaces on movement paths - identification of transport parking places)
	Interconnection with the river (access to the river - open spaces overlooking the river - easy access to the river)
Visual Vision	River visibility (visual access to the river - connecting the city to the river - physical access to the river)
	Clarity of movement paths (separation of types of movement - access of movement paths to the river)
	Diversity by heights (visual diversity - mass diversity - diversity by elements of urban spaces)
Riverfront Character	Identity (use of the city's heritage and landmarks - use of city identity)
	Continuity (interconnection of architectural elements - unification of riverfront components)
	The shape of the buildings (building orientation - the relationship of the building to the river - the use of local materials)
Landmarks	Aesthetics of monuments (use of city attractions - utilization of the river)
	Urban efficiency of landmarks (increasing the attraction of residents - interaction with the river)
	Clarity of features (ease of perception - clarity of composition and formation)
	Connection of features with the ocean (adapted to the ocean - sufficient public spaces around it)

Design Elements and Formatting	Functional criteria (infrastructure - sufficient lighting for spaces - various events)
	Visual criteria (use of art and nature - highlighting architectural details - use of the river)
	River façade landscaping elements (riverfront furniture - kiosks with different events)

Table 3. *Vocabulary of the Most Important Design Indicators of the River Facade*

7. The Mental Image of the City

Says Lynch The mental image is formed in humans as a result of the superposition of a set of images on several levels, starting from the street level to the level of the residential neighborhood and then the city, and the clarity of these levels varies according to their scale, and the more simplicity and regularity is available in the built environment, the more clear its mental image, and it has been concluded that man reduces in his mind the complex forms in the built environment to simple forms in order to be able to move and direct a path within this environment and turn it into a set of signs and semantic points for ease Movement [23] And through the field study carried out by Lynch Note that the sketches that have been drawn for samples may differ from reality, where reality is simplified by deleting, adding or merging elements into one element, and a change in distances and directions was also observed and sometimes a change in the scale of the elements was observed, but in general the order of the elements is fairly correct, as well as between that the mental image varies from person to person.

knew Lynch The mental image as "it is the product of the mental process that occurs between the environment and man, and the environment puts the distinctive physical elements and the relationships between them and the experiences that a person must go through, and each person arranges these relationships and distinctive signs in his mind and links them to the meanings that he understands through his experiences, and also the resulting mental image is compared to the perceived and visual elements in the environment and are common general mental images among a large number of city residents or something known to the majority and there is a mental image In particular, it varies from one person to another according to the activities that happened to him in the place in question or according to the experiences formed by him and results from the resulting memory of previous experiences between man and the environment and also from the momentary sensation in which the event occurs, the component of which the mental image is formed.[4].In writing The Image of City, Lynch dealt with the foundations through which the urban environment of the city (as spaces or buildings) can be perceived by the residents and the mental image around it and reach the visual physical elements that remain in the mind of the person about the city, and they are five elements classified by: (Sectors Districts - Paths - Landmarks - Nodes - Boundaries Edges) play an essential role in creating the city's mental image and will be clarified:

a. Paths

They are the channels where people move and can be such as main streets, pedestrian walkways, railway lines bridges rivers, and others the paths may become important in several ways such as (regular travel by way - focus on a special use or activity along the path may give importance to residents and pioneers - the path carries specific spatial qualities capable of increasing its importance - façade characteristics buildings are important to determine the path. - The proximity of the path to the city or something special makes it of increasing importance) and therefore is one of the important elements in the formation of the mental image of the city, where it is considered the dominant element in most people, as they always notice the city and its parts by moving within it, and these paths also help to reach all parts of the city within its urban fabric. The river and its riverfront are one of the most important paths in the city as it enjoys continuity and connects the parts of the city and is considered an important means of transportation in addition to its distinctive and unique characteristics[24] As in the riverfront of the city of Amstel In the Netherlands As shown in Figure 4



Figure 4. *River in the City of Amstel*

b . Edges

She Commas between Parts of the city and this is Linear breaks often and requires Continuity And clarity and is hard to penetrate until it confirms its function and sees Lynch It's represented by rivers. Mountains or rows of buildings or walls in ancient cities, and their important is that they are visual boundaries with a strong impact on people's perception, especially in linking spaces together or determining the boundary of areas or parts of the city, such as (the confluence of the river with the ground) and gives the area or city its own identity and maintains its privacy and plays an important role in the formation of the mental image of the city as it has characteristics that distinguish it from the rest of the elements and is easy to distinguish as it gives the region a different and distinctive character from the other and must To be clear and emphasized [25] Like the Charles River in Boston As Figure 5



Figure 5. *Charles River in Boston*

c . Landmarks

Signs by which people distinguish the place without reaching the mechanism. It varies. Landmarks in the city may be simple physical items and vary in size with their counterparts or exist. Relationship of variance between her and the background. Where differs shape with the background and the basic physical feature of it is uniqueness and ease of identification, and the shape of the element is the basis, where there are prominent forms in the city, such as a distinctive element in the city (the river), and these landmarks are associated with the details of the general life of people, so they differ according to the vision of each person and vary from person to person, in addition to their distinction in shape and giving meaning to the place through the events that occur near it over time and the value of the building that is located within the area or can be a landmark of a model. A certain that is repeated in a prevalent way that makes it a distinctive landmark within the city and forms part of its identity [26] Like the Vistula River in Poland As Figure 6



Figure 6. *Vistula River in Poland*

d . Nodes

The nodes are the points of connection between the city's procedure, where they are used to change the course of a movement to meet people or for the occurrence of various events and reflect the identity of the buildings that make up or surround them and be appropriate with the fabric of the city and attention to its aesthetic details and some of them overlook distinctive places such as the seat overlooking the rivers that are within the riverfront, which must be taken care of its details and furniture. [27] Such as Donauland Park in Austria, which overlooks the Danube River As Figure 7.



Figure 7. *Donauland Park in Nesma*

e . Districts

They are parts that bear similarities and make the city with each other and these similarities can be in the form of population or similar physical building characteristics, regional functions, historical background, etc. People can enter it mentally with the qualities that it possesses and forms in the minds of its inhabitants and users, and the physical properties that determine these parts are (texture, space, shape, details, symbol, type of building, use, activity, population, degree of maintenance, topography and others) and sometimes it has unique qualities such as riverfront sectors and as shown in the master plan for the development of the Dingan River in China as shown in Figure 8.



Figure 8. *Development of the Dingan River in China*

Methods

The study uses a descriptive approach, which begins with the development of the theoretical framework of the study by explaining the concept of the riverfront and clarifying the foundations and design principles of the riverfront that it is working to develop within the city with clarification of the time stages it went through for its emergence, and then clarifying the concept of the mental image of the city and explaining the elements that make

up the mental image of the city and explaining the importance of the river and the riverfront in enhancing the mental image of the city, to reach at the end of the theoretical framework to clarify the role of the riverfront in enhancing the mental image for the city as follows

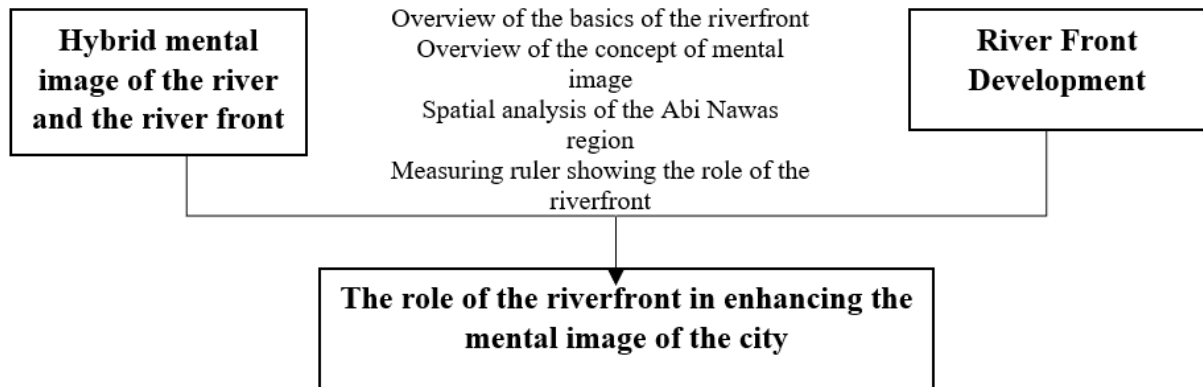


Figure 9. Workflow Diagram

Applied on the riverfront of the Abu Nuwas area located in the city of Baghdad to obtain accurate information about the area has been described and clarify the paths of movement within it, indicate the most important landmarks in it, and indicate the weaknesses and strengths in the region and finally reach that the river carries its mental image be hybrid and affect the mental image of the city.

Results and Discussion

A. Result

1. The Riverfront of the Abu Nuwas Area

Abu Nuwas area is located Next to Rusafa in the city of Baghdad, which was subjected to accumulations of deterioration and decomposition in all its joints Urban, the side of (Rusafa) represents the eastern part of the city of Baghdad, the date of the founding of Rusafa The old Rusafa was established in the year (159 m)- In the caliphate of the Mahdi in the Abbasid era The city of Rusafa became the urban heart of Baghdad and the center of attraction and borders the Tigris River along 12 km from the southwestern side. [28] You promise Abu Nawas area is a reality In the heart of the region Central From Baghdad, one of the most important places related and specialized in dealing with Scene Urban In the city of Baghdad The study area is specifically located from (Republic Bridge to Ishtar Hotel) and a length of about (1840) and deep (260 m) with an area estimated at (72.3 hectares) as shown in Figure No. 9, where it can be considered as a sector of the riverfront and penetrated by many streets that connect it to Al-Saadoun Street, which is one of the most important streets in the commercial city of Baghdad and the riverfront area of Abu Nawas Street represents one of the most important riverfronts of the city of Baghdad because of its cultural and architectural heritage within that area.

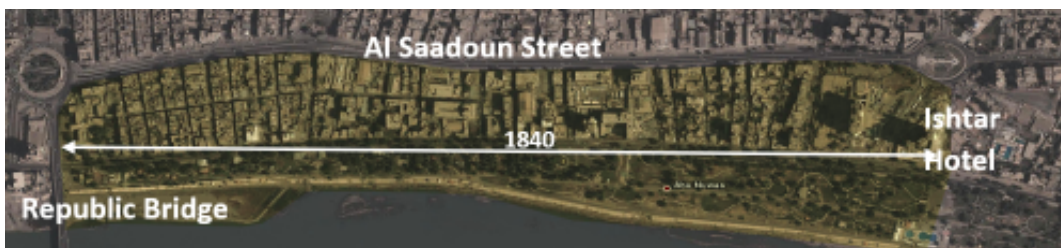


Figure 10. The Riverfront of the Abu Nuwas Area

For its distinction, as it is located in the heart of Baghdad and contains several heritage and administrative buildings and distinctive landmarks such as (Al-Aqeeda School - Baghdad Hotel - Ministry of Communications - Palestine Hotel - Ishtar Hotel - Mama Acer School - Ambassador Hotel - Abu Nuwas Statue) in addition to a group of houses with distinctive architectural styles and showed several reasons for choosing the study area:

- a. Diversity of activities within the boundaries of the riverfront area sector (residential, commercial, tourism,

educational, industrial, and heritage).

b. The distinctive location of the Abu Nuwas area in general and the study area in particular is because of its association with important street areas in Baghdad.

c. It enters the riverbank of Abu Nawas Street for redevelopment and part of it was implemented within the study area.

d. The riverfront area needs to be redeveloped and rehabilitated because there are many dilapidated buildings and incorrect uses.

e. The area itself is an important sign in the city's image as well as several important signs.

2. Land Uses

Land uses are one of the most important morphological elements and the fastest-changing in the city, where the use can change more than once with the stability of the general shape of the city and each city and each part of it includes a group of uses (commercial) – residential – industrial – etc) distinguishes it from others and that the Abu Nawas area is considered an area over time since its inception was considered a destination (touristic, recreational and cultural) with the presence of some housing for affordable families, but now it has changed in uses, as commercial use has become predominant in the area and even residential use has become dilapidated and abandoned, which led to the destruction of architectural styles in it, as well as housing is rented for other uses (as stores). - Simple factories) and current uses, According to Figure 10 shows the existence of an overlap between events (commercial, residential (violated), educational, industrial, and public facilities) as well as there are some public facilities of the state (such as government hotels – and some state departments (Department of Communications and branch of Al-Saadoun Bank) – Schools) With the change of most of the activities of the houses overlooking Abu Nawas Street to commercial irregularly and informally, this led to the destruction of the architectural style and its river façade, and the lack of open spaces within the sector showed the riverfront, except for the river bank, and all of it led to a lack of people's frequency to the riverfront sector (except for the river characteristic that was developed in 2023) due to inappropriate uses[28]



Figure 11. Land Use for Abu Nuwas Area

3. Movement System

The area of the riverfront sector of Abu Nawas (study area) is bordered by Al-Saadoun Street (one of the most important commercial and main streets in Baghdad) and towards the Tigris River, and the study area is represented starting from the Republic Bridge to the Ashar Hotel and reaching Al-Saadoun Street and during the field survey it was noted that there are a number of problems related to the site as Figure No. 11 as follows:

a. There is no separation of movement between public transport and private transport and no separation of pedestrian and bicycle traffic from traffic.

b. Public transport movement is represented by large buses and small cars, and large buses do not reach all areas of the region

c. The study, but it passes through Al-Saadoun Street adjacent to it

d. It was noted that there are no regular car parks as well as private parking for public transport

e. There are a number of secondary streets that connect Al-Saadoun Street with Abu Nawas Street and within the boundaries of the study area, but as a result of Infringing uses led to neglect and reduced movement in them, which

became dishonest.



Figure 12. *Movement System within Abu Nuwas Area*

4. Landmarks

The Al-Rasa area contains some distinctive landmarks that affect the mental image of the riverfront, which can be well exploited (Ishtar Hotel - Palestine Hotel - Baghdad Hotel - Mama Acer School - Al-Aqedah school- houses with architectural styles - in addition to the statue of Abu Nawas) As Figure 12

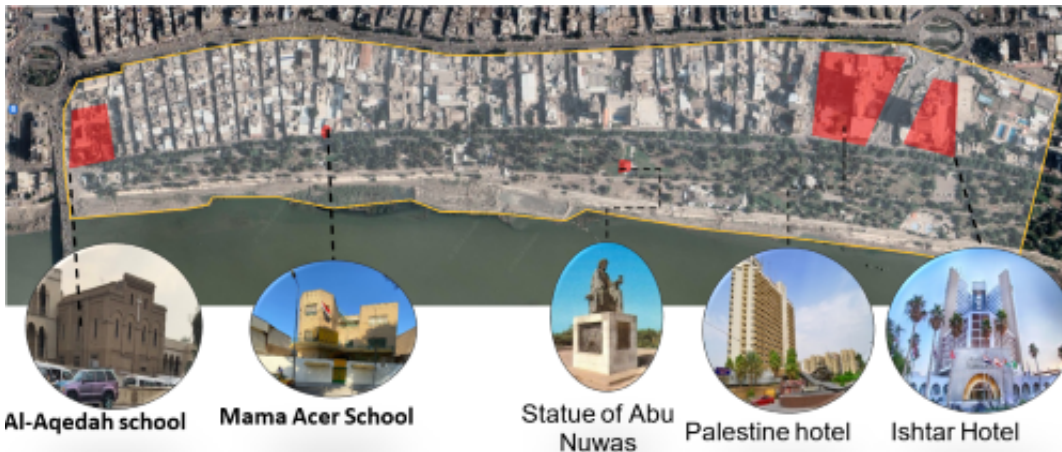


Figure 13. *Distinctive Landmarks in the Abu Nawas Area (study area)*

5. The River Bank of Abu Nuwas

Work has been done to develop the river bank, which is an important part of the river front, at the beginning of 2023 and so far by the Municipality of Baghdad and the excellence of the project: (making the bank a unified and connected corniche - the design took into account people with special needs - took into account the issue of afforestation and choosing the best trees that suit the atmosphere of Iraq - choosing high-lasting finishing materials - creating interactive spaces to attract residents - paying attention to the details of seating places and providing kiosks - providing pedestrian and bicycle paths) where The bank of the riverfront of Abu Nawas suffers from neglect and lack of maintenance and the lack of any security elements that help the population to come to it, especially in the evening, which reflected a negative image of the river front of the area and thus the mental image of the place and the city in general, but the start of its development helped this to reflect the image of its beauty and attention to its details (providing interactive places - providing walking paths and bicycles - providing seating places - providing appropriate afforestation - providing night lighting - Attention to design details Elements such as terraces, waste bin, w.c places) As shown in Figure 13



Figure 14. Illustrates the Development of the Bank of the Abu Nuwas Riverfront

Numerous issues were discovered following the examination of the site charts:

- The riverfront sector's buildings were neglected, which resulted in the loss of some of its architectural landmarks and legacy as well as the disintegration of its urban fabric and heritage stock.
- The lack of designated pedestrian walkways, the lack of space between cars and people when they are walking, and their absence along the river (apart from the current portion of the bank development).
- Overlapping uses (commercial, industrial, residential, and entertainment), which had a detrimental effect on the area by altering its activities and decreasing visitors.
- Although the area is easy to access, it was observed that the lack of parking and the lack of urban organization to control traffic patterns between automobiles and pedestrians resulted in the street being used as a parking lot.
- The absence of places designated for riding public transport and the absence of bicycle paths within the streets of the study area.
- The lack of open and recreational spaces within the boundaries of the study area, except for the river bank, reflects on the image of the city
- The deterioration of the infrastructure of the area led to the weakness of the services provided to it and led to the destruction of the secondary streets within it.

The measurement procedure will be applied to the study area to show the importance and role of the river front in enhancing the mental image of the city As shown in Table 5.

Table 5: A measuring ruler that shows the importance of the riverfront in enhancing the mental image of the city

Secondary vocabulary	Secondary vocabulary																																						
	Clarity of architectural landmarks of the city	The heritage of the city	Connecting river and landscape	Safe paths	Security points	Guiding signs	Clarity of composition	Clarity of the river	Clarity of the river	The use of air and water	Use of the river	Clarity of movement paths	Visual and physical access	Customized paths	Ease of public	Perception	Distinctive	Shading	People's gathering places	Space of movement paths	Improvements on air	Space continuity	Interaction with the river	Attracting people	The quality of the place	Identity of the place	Durable events	Green and public spaces	Activities throughout the day and night	The diversity of spaces	Diversity of activities	Stakeholder opinion	User reviews	Participation in decision making	parking	Restrooms	Infrastructure		
1 Identity	✓	✓																																					
2 Safety																																							
3 Clarity																																							
4 Aesthetics																																							
5 Accessibility																																							
6 Landmarks																																							
7 Urban spaces																																							
8 Continuity																																							
9 Urban efficiency																																							
10 Value																																							
11 Vitality																																							
12 Diversity																																							
13 Community Participation																																							
14 Coordination elements																																							

Figure 15. A Measuring Ruler that Shows the Importance of the Riverfront in Enhancing the Mental Image of the City

Through the application of the measurement procedure, it was found that the riverfront sector suffers from many problems (except for the river bank) in addition to the problems mentioned above.

- a. It is considered an area rich in architectural heritage but it has not been dealt with as it is correct
- b. Despite the clarity of movement paths and accessibility, visual access to the river is difficult.
- c. The West Bank is considered a place for people to gather and attract them after its development, but in the Gaza Strip area it suffers from neglect
- d. There is no coherence of the elements except (located on the bank of the West Bank Development Project)
- e. The interaction with the river was not widely done either through the presence of river activities and it is not possible to descend to it, but a bank works to attract people because it is considered a special space
- f. Urban efficiency is not good within the riverfront sector area.

B. Discussion

It is adopted after applying the measurement ruler to the study area that the river and its river façade enjoyed some special qualities of the mental image, which reflects the important and essential role in drawing and enhancing the general mental image of the city in addition to the formation of a hybrid mental image of the river and its river front, where it was noted that the river and the river front enjoyed the status (Nodes) through its own river bank, which worked to gather people and practice their activities and activities, as well as enjoy the capacity (Landmarks) being a distinctive area within the city of Baghdad, but it has not been paid attention to and the landmarks inside it in order to highlight it well, as for the rest of the qualities (such as the Paths, Edges and Districts) were not achieved well as a result of not dealing with the riverfront area properly and developing it, as the river and its riverfront did not do (Paths) and therefore as a result of neglect in it, despite the fact that it is one of the most important paths in the city, as well as (Edges) the river and the river façade have not been designed in a correct and distinctive way that facilitates access to the river, as well as the river and the river front (Districts), where the river front sector suffers from neglect in services, coordination elements and infrastructure, which led to the deterioration of the character of the sector in it, and therefore it reflected a negative image due to neglect, which requires when developing the region to deal together fully in order to contribute to enhancing the image of the mental city in general and drawing an image The research proposes several mechanisms or strategies for the development of the study area as follows:

1. The Mechanism of Clarifying the River as an Important Urban Paths within the City and Linking the Parts of the City to the River Front

- a. Add pedestrian paths with afforestation and seating
- b. Adding bicycle paths that contain parking for them
- c. Adding new routes for public transport and providing special parking for them
- d. Adding parking spaces in places that do not affect the urban landscape
- e. Activating the sub-paths and paying attention to them and adding lush trees of their own, with the possibility of converting some of them to pedestrians according to a comprehensive development plan
- f. Activating the abandoned places within the riverfront sector for the return of tourists and residents to them
- g. Highlight streets and intersections using art and nature
- h. Activating the river and highlighting its importance as a path by activating the river and some water events that use boats or small ships (such as a floating restaurant)

2. The Mechanism of Activating the Riverfront Area as a Distinctive Urban Districts in the City

- a. Reorganizing the urban area to suit the current time and improve the quality of life while preserving heritage buildings with a historical identity
- b. Redistribution of land uses while preserving uses that do not cause an impact on the area, transferring harmful uses and increasing the number of cultural and recreational events within
- c. Attention to providing public and open spaces within the boundaries of the riverfront sector

d. Easy movement within the boundaries of the sector with a separation between the movement of cars and pedestrians

3. The Mechanism of Activating the Edge of the River and its Interface as a Distinctive Landmark

a. Contemporary river edge design for easy access to the river

b. Revitalizing the edge and the riverfront by adding recreational and cultural activities overlooking the river or entering it (amphitheater runway)

c. Placing some distinctive landmarks with a distinctive design or historical value (Abu Nawas statue) overlooking the river and demonstrating them in order to attract residents and tourists and provide open spaces around them

d. Activating the landmarks within the riverfront area by reusing them in order to become appropriate to the area and restore its heritage and architectural value

Conclusion

It turns out that the development of the river and its river façade is at a general and comprehensive level for all aspects and determines the river façade in the area surrounding the river and overlooking it, not only the area adjacent to it, especially in the river front project of Abu Nawas did not deal with the riverfront area properly except with the river bank, which contributed to drawing part of the image of the private mental river façade as well as the role in enhancing the image of the city public mentality.

The practical study showed that the river and its façade have the characteristics of the mental image of Lynch and at one time and in varying proportions, meaning that the river carries the characteristics of a compound (hybrid) where it draws a special mental image is the hybrid mental image of the river and has a major and important role in drawing and enhancing the image of the mental city as it is the river area and its river interface of the most important areas of the city.

The river has not been used in a healthy way in our Iraqi cities, where the river and its façade can be used as an urban transport route or as an important node within the city and also as a distinctive landmark within the city and attention to its interface as an important urban sector within the city by deviating its development strategies in order to contribute to drawing the city's current and future mental image, as the river is more than just a waterway within the city.

Attention to public transportation and sustainable means of transportation, staying away from cars as much as possible, preferring pedestrians and bicycles, and giving special paths to them within the project, which contributes to attracting residents and visitors to it and thus makes the river front and the river a special place.

Attention to land uses that suit the area and preserve its heritage, with the dimensions of any use that causes visual or physical deformation that prevents contact with the river, taking into account the interest in the presence of buildings with distinctive designs that give additional value to the place.

Attention to designing all the details within the riverfront area (such as the edge of the river - buildings overlooking it - seating areas - and coordination elements) in order to make it a distinctive area that differs from the rest of the city and a distinctive landmark.

Providing public, open and green spaces that contain cultural and recreational events in order to attract visitors to the riverfront area and achieve easy access to these spaces.

Focus on connecting the river to the rest of the city and its center through the riverfront sector to achieve access to the river for all people. In the end, the importance of the river and the river front becomes two important elements within the elements of the built environment of the city if they are not the most important in drawing the city's general mental image of it because of their distinction and their acquisition of more than one characteristic at the same time, and this is what distinguishes them from other elements.

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