

Al-Hilla Neighborhoods Restoration in the Present-Day Era

Dr. Ameerah Jaleel Ahmed¹

Abstract

Prior literature has stressed the significance of restorative considerations in urban planning, as it significantly impacts residents' physical, psychological, and physiological well-being, happiness, and physical activity. The study highlights the crucial role of restoration criteria in urban environments to enhance well-being and create a more sustainable environment. The concept of "Restoration" was developed in the 2000s to address essential characteristics in urban environments, but there is limited literature on this topic in local contexts. This research aims to identify the criteria for "Restoration" in urban environments and evaluate their effectiveness by analyzing previous literature and extracting the discussed criteria. The study examines the relationship between "Restoration" and psychological, and physical well-being using various theories and methodologies, in local neighborhoods environment.

The research problem, as well as its hypotheses and goals, were determined. An inductive approach was used within two practical and theoretical axes to achieve the study goals. The theoretical axis involved establishing the conceptual and theoretical foundation for the sources of restoration criteria, after looking over the literature review. Six local neighborhoods in AL- Hilla city were used to apply these requirements in the practical axis.

Finally, the research found There are three main sources of restoration criteria related to the user, the physical and the natural environment, within 3 levels (regional, city, and Ground). As well as our local neighborhoods in Al-Hilla City can benefit from the implementation of these restoration criteria to improve the well-being of their residents. This can be achieved by organizing and activating aesthetic restoration criteria that address both physiological and psychological stress.

Keywords: literature, urban planning, AL- Hilla city.

1. Introduction

Rapid urbanization imposes new challenges for users of contemporary urban environments. The environment promoted psychological stress, which is a major health hazard in it, as well as responsible, directly and indirectly, for the enormous health costs and economic systems, also affected the physiological and psychological well-being through some of its features; so a group of contemporary concepts emerged, including the concept of hospitalization (Restoration). Restoration means in language dictionaries (revival, return, remaking, renewal, reformation, recreation, rejuvenation, re-establishment, recovery), but the idiomatic meaning in the field of architecture, "Joye and van den Berg knew it as "the experience of a psychological and/or physiological

¹ Assistant Professor, Architecture Department, Faculty of Engineering, University of Babylon, Iraq,
ameera_jaleel@yahoo.com

recovery process that is triggered by particular environments and environmental configurations. "(Weber, & et al, 2018) ".Klaus & et.al. " knew the concept of restoration is " Ecological restoration is defined as the process of assisting the recovery of a degraded, damaged, or destroyed ecosystem in the direction of a historic reference state" (Klaus, & et.al.,2021). Restoration in the urban environment appeared in the 1930s of the last century. near restored urban areas or on it, when and provide parks, gardens, and open space to restore habitats in urban places. the concept focused on several issues including achieving (water quality, aesthetics, quality of life, endangered species, etc.)(Mrill,2008,p.175). Previous research reveals that natural habitats have a far higher potential for healing than physical environments; Because it is characterized by not processing information in nature, decreased arousal (physiological), being away from one's daily life, and restoring attention (Weber, & et al, 2018). The urban environments in AL-Hilla city suffered from various urban problems, including visual pollution and crowding...etc.; Therefore, it is necessary to define restoration criteria in urban environments. in an attempt to assess the reality of urban environments in the city and find appropriate solutions.

The concept of restoration of neighborhoods in the 20th century is reflected in changing attitudes and approaches to urban development and community empowerment. The concept in this era focused on the restoration of the physical environment and went through three stages. In the 1940s and 1950s adopted an Urban renewal strategy, then in the 1960s and 1970s adopted a rehabilitation strategy, faintly In the 1980s and 1990s, a "smart growth" strategy was adopted. neighborhood restoration initiatives have various degrees of Neighborhood restoration projects in the 20th century have varying degrees of overall success and typically include challenging trade-offs between maintaining historic buildings, creating new, cheap housing, and satisfying the needs of the local populace. (Katz, 1994),(Jacobs, 1961),(Fainstein, 2001),(Duany, & et al. , 2011). the 21st century has seen many social, economic, and environmental factors, as well as emerging approaches and technology, affect neighborhood restoration. It passed through several stages, at first The greater emphasis on sustainability and green infrastructure has been one of the major trends in neighborhood rehabilitation in the 21st century. Then the second trend is the rise of the use of technology, Finally, neighborhood restoration in the 21st century occurs in the context of more general global issues including climate change, migration, and economic inequality. These issues need creative and cooperative solutions that take into account both present needs and long-term resilience. Neighborhood restoration in the twenty-first century is often defined by a growing awareness of the connections between social, economic, and environmental issues as well as a commitment to equality, sustainability, and community empowerment. In this era, The concept has become around the human being and achieving a healthy environment and physiological, psychological, and sociological well-being.(Bostic& et al. 2012).

so The search problem has been identified there is a cognitive need to define the restoration criteria of local residential neighborhoods and the effectiveness of these criteria in psychological and physiological well-being, as well as rehabilitating degraded local urban environment, so the hypothesis is the effectiveness of restoration criteria (physical & Ecological criteria) of the local urban environment is determined by the psychological and physiological well-being, and their ability to rehabilitate the degraded urban environment. The research objectives were gathering and classification of restoration criteria of the urban environment, as well as, determining its effectiveness through the psychological and physiological well-being, furthermore, rehabilitation of degraded local urban environment, and its applicability.to achieve the research objectives and to test the hypotheses, an exploratory and inductive methodology for the research was determined with two axes as follows:-

A. Theoretical axis:- represents the conceptual and cognitive framework of the research By researching previous literature, analyzing, drawing conclusions, and

providing a theoretical framework to evaluate the effectiveness of the criteria that were extracted.

B. The practical axis:- (6 residential neighborhoods that were built during the twentieth century) were examined. Application of the proposed framework and restoration extracted criteria. Then the evaluation of these urban environments, as well as determining the criteria effectiveness .finally analyze data, Results, And drawing conclusions and recommendations.

2. Restoration theories

Urban ecological restoration theory was first developed in the 1930s in the US. It is a result of the changing post-industrial environment and the enormous industrial scale that led to problems with environmental deterioration that became more severe in the 1980s (Xia Xiaotang,2015,p.536). Hence, in the previous century's 1880s and 1990s. The term "restoration theories" refers to a group of hypotheses that make an effort to explain why individuals are drawn to natural settings and why these settings have a restoring influence on human well-being. Below are the top three theories for restoration:

a. Psycho-Evolutionary Theory of Stress Reduction 1983

The Psycho-Evolutionary Theory of Stress Reduction by (Roger Ulrich 1983) claims that emotions, rather than cognition, have an impact on restoration(Weber, &et al, 2018). Ulrich identified many of the elements of nature, which can affect the aesthetic response. exposure to aesthetic stimuli was considered a positive experience, Where the beauty of sensible stimuli produces pleasant feelings, and reduces stress. The environmental characteristics that achieve the aesthetic preference. The stress-reduction theory reflects the deficit of the attention-restoration theory. it focused on emotional states and stress relief, But Both theories partially agree with the restoration of urban environments despite their differing views. The two theories assume That human evolution has been shaped by their interactions with natural settings. (Karmanov,2008,p.116 & Ronald)· (Weber, &et al, 2018). Roger Ulrich gives six indications of restoration, as follows (Ulrich, 1983,85-125):-

- i. Scene elements that are perceived independently of one another:- It can be realized through the (Complexity\Moderate complexity)
- ii. Visual scene configuration based on structure and patterns:- It can be realized through the (Structural properties \ High structure)
- iii. form of scale and/or distance for a scene (enclosedness):- It can be realized through ((In-depth and environmental data).
- iv. Visual texture in a scene's ground:- It can be realized through the (Even texture(.
- v. Element of Mystery:- Innate desire to explore and learn about landscapes; requires an air of mystery. It is possible to realize it by (enough so that information can be obtained without risk (balancing, curiosity and fear))
- vi. The Water in the Visual Scene:- the preference of most scenes increases when there is water. The water promotes interest, and positive feelings, and excites a quickly effective response.

b. Attention Restoration Theory (ART).1989

The theory asserted that people could focus better after spending time in nature or even looking at nature scenes. Nature has long been regarded philosophically as a source of peace and energy, but in the 1990s the scientific community began to test whether nature had a healing feature. (Rachel and Rachel Kaplan) established the theory in their book (The Experience of Nature A Psychological Perspective) in the 1980s. It emphasized

that attention has two components (Kaplan & Stephen, 1989, 179). (Involuntary attention) Where attention is attracted by stimuli that are interesting or important, and (Voluntary attention) Where attention is directed through cognitive control processes. A conceptualization of (ART) theory is (Four environmental factors can enhance involuntary attention as recovery from mental exhaustion exacerbated by the absence of voluntary attention.), (Weber, & et al, 2018) (Kaplan & Stephen, 1989, 189-192), as a follow (fascination, being away, extent, compatibility).

c. **Biophilia Hypothesis:**

According to the Biophilia Hypothesis, humans have an inbuilt attraction for nature, and exposure to natural environments can promote physical and psychological well-being. This hypothesis has been supported by a growing body of research, which has identified a range of resources that can promote biophilic experiences and improve well-being (Kellert & et al, 1995), (Williams, 2017). Some of these resources include:

- a) **Natural light:** Exposure to natural light has been shown to improve mood and productivity, and can help regulate circadian rhythms.
- b) **Plants:** Plants can help to improve indoor air quality, reduce stress, and promote a sense of calm.
- c) **Water:** Water features, such as fountains or aquariums, can provide a calming effect and improve air quality.
- d) **Views of nature:** Views of natural landscapes or green spaces can promote a sense of well-being, reduce stress, and improve cognitive function.
- e) **Natural materials:** The use of natural materials, such as wood, stone, and clay, can create a sense of connection to nature and promote a calming effect.
- f) **Access to nature:** Access to natural environments, such as parks or gardens, can promote physical activity, social interaction, and relaxation.

3. Literature review

A. (Weber, & et al, 2018) the study is an attempt to answer how restorative in urban environments (natural and man-made environments). Through extracting the results of the previous literature on the restorative potential of urban environments, what urban environments are seen as restorative? What (environmental) elements interact with the restorative capacity of a place? After analyzing 39 studies, It was concluded that natural elements in urban environments have effective restorative potential, and also It can increase the regeneration of urban settings. Built environments differ in their effective restorative potential. And the architectural elements and cultural and recreational areas have a restorative value, While results vary in streets and residential areas, as well as many urban sites, can have restorative effects. But these values may be affected by factors such as (cultural background, age, social components, and individual dispositions) (Weber, & et al, 2018).

B. (Karmanov, 2008 & Ronald Hamel) study shows that the urban environment design can have the ability to reduce stress, and improve mood; equal to those in the natural environment. The study was a comparison of emotional effects between a natural environment and an urban environment to determine the characteristics that most affect recovery. It identified the Influential Physical Characteristics in a Restorative urban environment. Such as Cultural and historical information contributes to an increase in perceived interest by 25%, and perceived attractiveness by 14%. Theorists have identified four characteristics that contribute to recovery in urban environments (being away, fascination, extent, and compatibility with human needs) (Karmanov, 2008, p.116 & Ronald). They used a five-dimensional model (depression, anger, tiredness, power, and

tension.) each dimension has a scale from (0-4) five scales. Attractiveness and novelty (interestingness) are the two main dimensions of aesthetic evaluation. Six of the ten scales (ugly-beautiful, unfriendly-friendly, unpleasant-pleasant, unenjoyable-enjoyable, repulsive-inviting, unipersonal-personal) are measures the attractiveness of an environment. One of the most important criteria is the provision of green spaces and water within the city, as one of the primary means to enhance the restorative potential of the city. This preference is considered to be one of the evolutionary origins of humans

C. (Hazhir& Farzin, 2017) the study focused on the effect of the built environment on promoting psychological relaxation, by analyzing a group of research and its results in the same field, to identify the environmental factors affecting the human psyche. The study concluded that the factors affecting the human psyche and behavior are:-

i. (interestedness in place) was included in the dimensions (emotional and functional meanings of the individual and society, as well as the identity of the place).

ii. Architectural controllability allows people to control the environment. This vocabulary includes (space constraints), (layout flexibility), (privacy), (territory), (proper perspective, (depth)(The openness of the surrounding space to the buildings on the site), (visibility), (responsiveness), and (control over climate and lighting).

D. (Rita Berto2014) study focused on the role of nature in facing psycho-physiological stress. Through a review of previous literature for detection of revealing the direct and indirect natural factors affecting psycho-physiological stress, such as (positive and negative emotional dimensions: fear, friendliness, anger, aggression...etc), and (cognitive dimensions, sensory stimuli, and perception (sounds, etc.). the study found that physical settings play a role in facing stress and that exposure to natural environments directly achieves recovery from physiological stress and mental fatigue. Also, It supports stress recovery and attention restoration Theories, furthermore protects people from the impact of environmental stressors, physiological and emotional preparedness, as well as Attention restoration more than exposure to urban environments. Exposure to natural scenes reduces the negative effects of stress, which reduces the negative mood state and enhances positive emotions. It renews the decline in cognitive performance associated with stress and is reflected in particular in attention tasks Through the real effect of nature viewer.

E. (Gregory, J. Paul, and Gretchen/2012(the study focused on examining the nature effect on human cognitive function and mental health, such as (cognitive function and/or mental health attention, concentration, memory, impulse inhibition, stress, and mood) Through environmental psychology, urban planning, medicine, and the aesthetics of green spaces. He discussed the term "wilderness" which represents the degree or amount of nature contained in a landscape based on Wilson and Kellert's statements. These statements showed that man has an innate love for the natural world. because that is the result of genetic formation and evolutionary history, also the evolutionary experience of humans includes natural environments, and therefore he tends to find it in urban areas, consciously or not. Wildlife is the areas that contain elements of living systems such as plants and animals .it range from a small urban park to a pristine wilderness.

F. (Robinson& Juhani,2015) a study showed that human activities depend on the human brain, which actively participates in the natural, urban, social, and cultural environments in which we live. This means that the physical environments we design can change the human mind, ability to think, emotion, and behavior. Some thinkers see that we are in a neuroscience revolution that is no less important than Galileo's revolution in physics and the Darwinian revolution in biology. Experts in various disciplines emphasized the critical role that the natural environment plays in determining our mental, physical, cultural, and social development. This statement imposes that the urban designer contributes to the achievement of human and ecological well-being, also the design must be based on a biological understanding of human nature. The biological

sciences in general and neurosciences, in particular, can provide some basic working principles and design criteria. So designers have a moral responsibility, and we cannot hope to design a sustainable future except by honoring our historical, biological roots." Today's design may have a far-reaching impact on the neurogenesis of generations." Neutra. clarify that architecture is not optional, or an aesthetic element, It is always the fabric of our survival, our potential prosperity, or our potential demise (Robinson & Juhani, 2015, p.3-7). While (Robinson & Juhani) emphasized that the urban environment should achieve the ecological well-being of mankind by:-

- Psychological well-being (feeling satisfied with life, higher self-esteem and vitality, lower cognitive and cognitive anxiety, and increased physical activity)
- physiological well-being (neurogenesis of generations, physical and mental health)

G. (Lawton & et al, 2017) study Showed that feelings of connection to the natural environment Promote mental health and well-being, and the role of contact with nature in a positive relationship and achievement (life satisfaction, high self-esteem, Psychological well-being, and vitality, Decreased cognitive and cognitive anxiety, and increase physical activity).

H. (Mriil, 2008) study dealt with the issue of hospitalization in the urban environment as a tool for education, and provide opportunities to learn about the environment so that people become more aware of non-human species and more aware of the care needed to promote environmental health. The study dealt with the challenges faced by suburban development on the diversity of non-human species and basic ecosystem functions such as(garbage cycling, hydrological processes, water quality climate challenges, biological diversity (wildlife of plants and animals))as a result of human activities, and habits. Environmental scientists have developed strategies for recovery through (Rehabilitation of degraded urban landscapes, and cultural and social renewal); so the recovery of the old urban environment can be achieved through the application of these strategies. It can decommission, replace or remove old and obsolete urban infrastructure to achieve recovery and broaden the relationship between environmental restoration and social justice. provide habitats for human recreation and native plants and animals, and provide a range of important environmental services. The studies dealt with trends focused on the focus relationship (race, ethnicity, justice) on restoration, While others focused on (providing wildlife, The history of biodiversity), but the others focused on(Investing and restoring urban habitats within cities). The researcher concluded with climate change, Urban restoration will be characterized by intensive and comprehensive management to serve wildlife and human needs.

I. (Klaus, Valentin H., and Kathrin Kiehl, 2021) (study discussed the issue of interest in green urban spaces over the past decades, and its relationship with (wildlife conservation, human well-being, adapting to climate change, and biodiversity). also discussed (the need to form new concepts of environmental restoration, as well as rehabilitation to improve ecosystem functions and services, also conservation of biological diversity in cities). The natural and semi-natural ecosystems in urban areas need significant modification and the development of new and mixed ecosystems. The study provided a conceptual framework for urban restoration and rehabilitation. restoration goals have been set in different levels of ecosystems such as (historic, hybrid, and novel ecosystems). The study stated to reshape successful urban green spaces And rethink them by involving citizens and stakeholders in making these systems more sustainable in the future. The study suggested the term (ecological rehabilitation) to signify improved (habitat), but without going back to the previous historical state of the ecosystem. this also includes the urban environment(recovery, rehabilitation, pollutants, and trash).

J. (Elmqvist, Thomas, et al,2015) study discussed the economics of ecosystem services (blue and green spaces): resulting from human activities through empirical analyses, and estimates of the economic benefits from urban ecosystem services, Based on data from 25 urban environments in the USA, Canada, and China. The study predicted that about 60% of the projected urban land will be built in 2030. The results showed that investment in environmental infrastructure in cities, environmental restoration, and rehabilitation of ecosystems (green and blue spaces) in urban areas the desirable environmentally, socially, and economically .urban ecosystem services are a variety of habitats, including green spaces(such as parks, urban forests, cemeteries, vacant lots, gardens and yards, campus areas, landfills), and blue spaces, including (streams, lakes, ponds, artificial swales, and stormwater retention ponds). These spaces provide ecosystem services in the urban environment through (regulation of the microclimate, reducing the urban heat island effect (a 10% increase in tree canopy cover may lead to a 3-4°C decrease), Saving large amounts of energy used in air conditioning , reduces energy needs from fossil fuels, and reduce carbon emissions). There is interest in restoring urban ecosystems by achieving biodiversity to restore at least 15% of degraded ecosystems by 2020. And investment in green and blue urban infrastructure is a tangible contribution to the green economy of the twenty-first century, and Sustainable Development Goals (SDGs).

K. (Xia Xiaotang,2015) the study discussed the economic connotation of ecological restoration In China since the 1950s. This problem resulted from the rapid economic development and urbanization process that created urban diseases (physical environment, green, and blue spaces). The restoration of the urban environment depends on the ability of ecosystem self-regulation and self-adaptation, and regulation and artificial intervention, To conserve soil and water, modify the local climate, environmental purification, and preserve the ecological function of biodiversity. so urban restoration aims to continually repair and improve the function of the ecosystem, and not to fully restore the ecosystem to its original state only (ecological rehabilitation). The research emphasized that the main purpose of urban ecological restoration is to repair and rebuild the damaged natural ecosystem at both levels (planning and design).

4. Conceptual framework

The research identified three levels of urban restoration planning as shown in Figure No. (1):-

- i. The Regional level:- It works at the level of planning natural and industrial scenes at the regional level
- ii. The city level:- This level is concerned with the urban environment (natural and industrial), as well as mitigating the negative consequences of urban development to restore the ecosystem is the main objective. Include Carrying out an analysis of natural environmental resources (aquatic environment), restoration of the damaged ecosystem, Building a green urban infrastructure network, adapting to the ecological space of the natural process, and improving the pattern of the urban green space system.
- iii. Ground level:- It is the idea of landscape design in (sponge city) at ground level (Parks, green spaces, sidewalks, roads, etc.).

5. Indicators of Restoration Criteria

By reviewing the previous literature, there are three basic sets of criteria, as shown in Table No. (1) and as follows:-

- i. (Psychological& Physiological criteria) resulting from sensory and mental stimuli (visual, audio, and thermal) that are Affects sensory and cognitive perception of the urban environment, When these stimuli are characterized as (uniqueness, Vividness, and Distinctness)
- ii. (Physical criteria) are result from the aesthetic stimuli represented by (Architectural elements and scenes, cultural and recreational spaces), measured by objective and subjective morphological scales.
- iii. (Ecological criteria) are caused by natural stimuli represented by(Blue and green spaces, biodiversity and wildlife, adaptation to climate, characteristics of ethnic groups, etc.).

6. Case Study

Samples were selected from AL- Hilla City. A group of residential urban environments with different characteristics (historic, hybrid, and novel ecosystems neighborhoods) .which were established at different periods during the 20th century. Also, the public spaces were selected within these residential neighborhoods. They included the following:-

- 1- historic neighborhood:- (A) Al-Jameen neighborhood in Historic downtown, & (B)AL- Khusrawiyya
- 2- hybrid neighborhood:- (C)AL-Thawra the neighborhood in the 1950s to 1960s, & (D) Military neighborhood in the 1970s and 1980s
- 3- novel neighborhood:- (F) Bustan AL-hulw neighborhood& and (E)AL- Imam Ali in the 1980s to 2000s

7. Results

- a. Results of Theoretical axis:- By reviewing the previous literature, we note the following:-
 - i. The restoration of the urban environment depends on the ability of ecosystem self-regulation and self-adaptation, and regulation and artificial intervention to conserve soil and water, modify the local climate, environmental purification, and preserve the ecological function of biodiversity.
 - ii. The primary goals of urban restoration are to improve (urban ecological function, self-organizing, self-control, and self-repair ability of ecology, healthy growth of the ecological system, structure of urban ecological space, and ecological environment for human habitation). Restoration criteria for the urban environment fall into 3 levels (The regional level, the city level, and the Ground level).
 - iii. The sources of Restoration criteria are related to the user's psychological and physiological characteristics, as well as visual aesthetic characteristics of the physical environment, and the characteristics of the natural environment. These characteristics influence each other and form three types of Restoration criteria in the urban environment (Visual aesthetic criteria, physiological and psychological criteria, and ecological criteria). These criteria are measured (by objective and subjective psychological scales) through three basic sets of criteria, (Psychological& Physiological criteria), (Physical criteria),(Ecological criteria) as shown in Table No. (1)
- b. Results The practical axis:- Through observation, photography, and checking plans of the elected neighborhoods; evaluated the restoration criteria types ((PS, PH, AV,

ECO.) for these residential environments, based on the theoretical framework and the indicators suggested in Table No. (1). the search results show the following:-

- i. The historic neighborhood:- In the downtown and the neighborhoods that build at the beginning of the 20th century It was characterized by a higher rate of recovery than those that were created later. But the hybrid neighborhood:- was characterized by an obvious drop in restoration criteria in neighborhoods that were established in the period from the 1950s to 1970s. while the novel neighborhood:- was characterized by obvious height in restoration criteria in neighborhoods that were established in the period the 1980s to 2000s, this is a result of the varying awareness of planners and designers at these different stages.
- ii. Some restoration criteria in Residential neighborhoods generally have achieved low percentages such as (Involuntary attention, Biodiversity, and wilderness, Diversity of ethnic groups and peaceful coexistence, blue spaces, the mystery of the scene's element, Visual texture, Visual configuration, and being away). The results showed that they achieved (33% - 47), but the others achieved (70% - 57) such as (Community participation, life Satisfaction, and social justice).
- iii. The results showed that most of these neighborhoods suffer from low restoration criteria in their ecosystems, as they achieved (23-34%) except for historic neighborhoods which achieved (51-83%). This contradicts previous studies that have indicated that natural environments have a much higher recovery than physical environments because it is characterized Not to process information in nature, low physiological excitement, and restoring attention.
- iv. Achieving the physiological criteria in the urban environment is one of the most influential factors in achieving restoration in the urban environment($R^2 = 0.99$), then Aesthetic and visual criteria($R^2 = 0.84$) Fig no. (4).

8. Conclusion

- A. There are three main sources of restoration criteria
 - i. (psychological and physiological characteristics),
 - ii. physical environment (visual aesthetic properties of the physical environment),
 - iii. the natural environment (ecological characteristics)
- B. The most important principles of restoration in In our local environment to achieve Sustainability is to contribute to the protection of biodiversity; improve human health and well-being; adapt to climate change
- C. Our local environment needs to activate the recovery criteria within 3 types of criteria
- D. the physiological criteria and Aesthetic and visual criteria in the urban environment are one of the most influential factors in achieving restoration in the urban environment, as well as contradict previous studies that have indicated that natural environments have a much higher recovery than physical environments because of it is characterized Not to process information in nature, low physiological excitement, and restore attention.

9. Recommendation

The search recommends the Planning and executive Institutions In the city contribute to raising the level of restoration criteria in the city by attention to psychological, aesthetic, and ecological criteria . as well as raising the indicators values (Involuntary attention,

Biodiversity, wilderness, diversity of ethnic groups and peaceful coexistence, blue spaces, the mystery of scene's element, Visual texture, Visual configuration, and being away) in our local neighborhood.

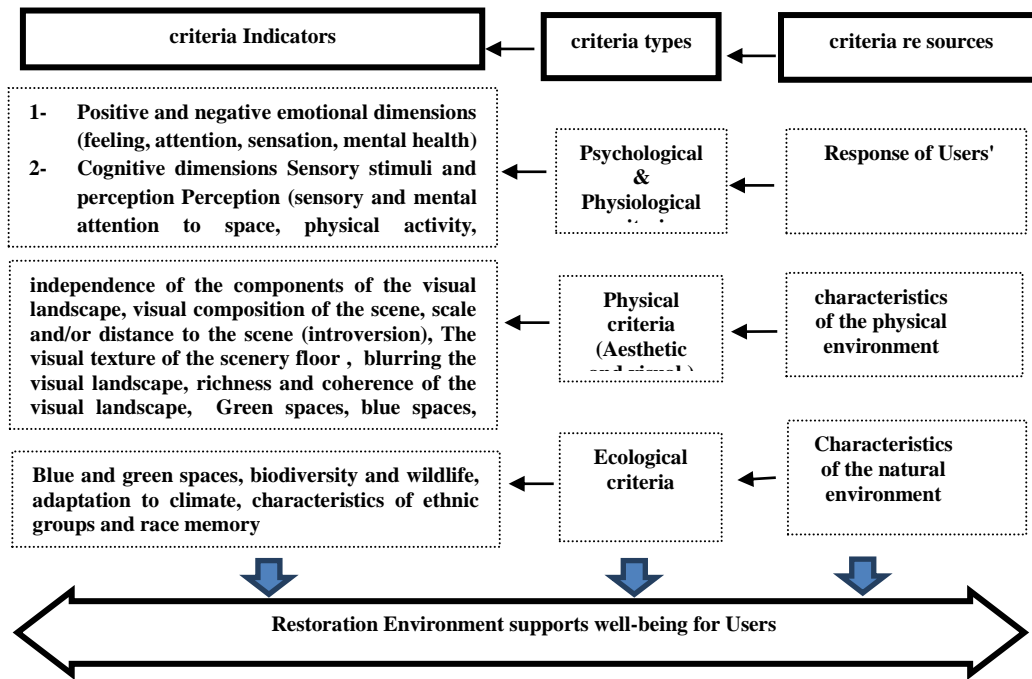


Figure No. (1):- Conceptual framework

Table No. (1) shows the restoration criteria, indicators, and measures in the urban environment

criteria e measurement	criteria Indicators	code	criteria types
Emotional Dimension Scale:- (PAD) emotion scale	1- Feeling of Pleasure	PS1	Psychological criteria (PS)
	2- Feeling of Arousal	PS2	
	3- Feeling of Dominance	PS3	
Measures of cognitive dimensions through:- Through (observation, data, interviews, software, etc. about the concentration, memory, impulse inhibition, stress, mood, race memory, Seriousness, and attention	4- voluntary attention	PS4	
	5- Involuntary attention	PS5	
	6- Sensory perception and cognitive perception	PS6	
	7- Decreased cognitive anxiety	PS7	
	8- Community participation (social interaction and homogeneity)	PS8	
	9- diversity of space behavior(PS9	
	10- Satisfaction with life	PS10	
	11- social justice	PS11	
Psychological and biological dimensions:- Through (observation, data, interviews, software, etc. About (concentration), (memory), and mood	12- Physical activity and vitality	PH12	Physiological criteria (PH)
	13- Mental health (physiological functions of the brain)	PH13	
	14- Physical health (physiological functions of the body(PH14	
sensory and emotional dimensions scale:- represented by measurements (ugly - beautiful, unfriendly - friendly, unpleasant - pleasant - unpleasant - pleasant, disgusting - attractive, impersonal - personal) to the:- a) Perceived interestingness above 25% b) Increased perceived attractiveness	15- fascination(clear sensory stimuli)	AV15	Physical criteria (Aesthetic and visual) criteria (AV)
	16- being away (Feeling detached and liberated)	AV16	
	17- Compatibility (feelings of pleasure and compatibility with the environment, activities familiar to the individual)	AV17	

above 14%	18- the extent (feeling of being integrated, Community participation, richness and cohesion of the environment)	AV18	
Physical and aesthetic dimensions scale:- Through (Complexity\Moderate complexity), environmental information,	19- Independently perceived components of a scene	AV19	
	20- Cultural and historical information about the visual scene	AV20	
Physical and aesthetic dimensions scale:- Through Diversity of structures and structural patterns,)privacy), (territory), (layout flexibility), (proper perspective), (visibility), control, and access to open spaces.	21- Visual configuration of a scene	AV21	
Physical and aesthetic dimensions scale:- Through spatial depth and closure (the openness of space that surrounds the buildings with the site)	22- scene (enclosedness)	AV22	
Physical and aesthetic dimensions scale:- Through human scale, controllability	23- scale	AV23	
Physical and aesthetic dimensions scale:- Through The degree of roughness and smoothness of the scene's ground	24- The visual texture of the scene's ground	AV24	
Physical and aesthetic dimensions scale:- Through scene skew, fear of the scene ,The degree of mystery and curiosity (Explore and collect environmental information)	25- mystery of the scene's element	AV25	
emotional, psychological, and biological dimensions scale:- through sensory response, positive feelings, ecological well-being (psychological and physiological), climatic comfort, ecological rehabilitation)	26- green spaces	ECO26	Ecological criteria (ECO.)
	27- blue spaces	ECO27	
	28- Biodiversity and wilderness	ECO28	
	29- Climate adaptation	ECO29	
	30- Diversity of ethnic groups and peaceful coexistence	ECO30	
	31- garbage cycling	ECO31	
	32- hydrological processes	ECO32	

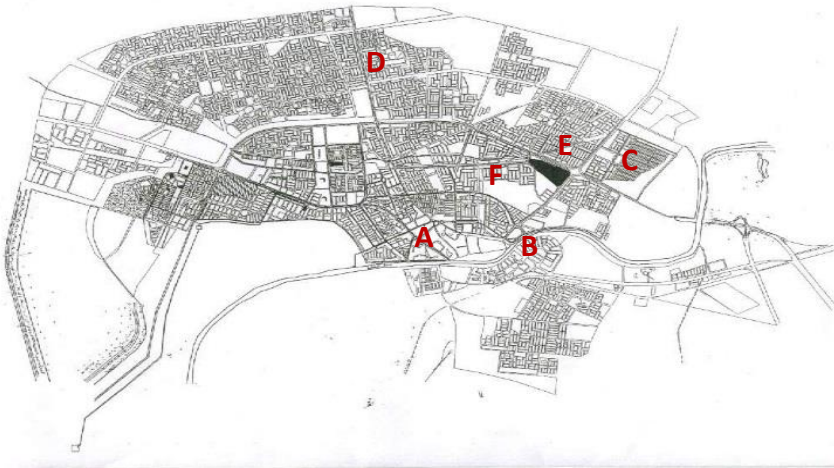


Figure No. (2):- Al-Hilla Master plan and the case study elected

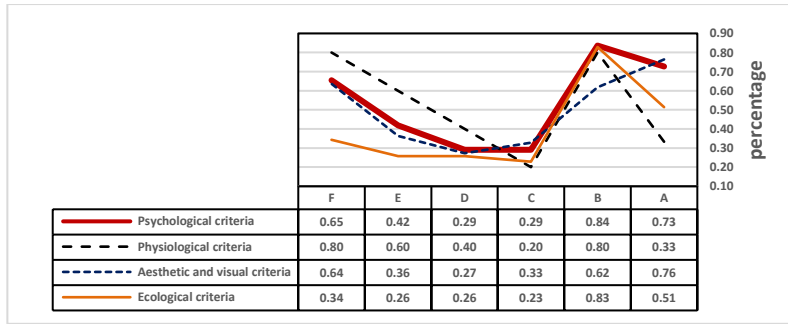


Figure No. (3):- the percentage of restoration criteria achieve in the neighborhood

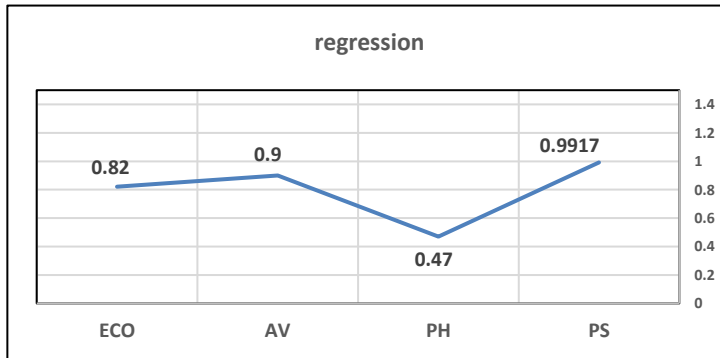


Figure No. (4):- the regression of restoration criteria

References

- 1- Agyeman, Julian. Sustainable communities and the challenge of environmental justice. NYU Press, 2005
https://books.google.iq/books?hl=ar&lr=&id=V8cVCgAAQBAJ&oi=fnd&pg=PP9&dq=%22Sustainable+Communities+and+the+Challenge+of+Environmental+Justice%22+edited+by+Julian+Agyeman+and+Robert+D.+Bullard&ots=ACkCRzcvBj&sig=svYsPO6x98E1oEzAwQHW9_WmvAo&redir_esc=y#v=onepage&q=%22Sustainable%20Communities%20and%20the%20Challenge%20of%20Environmental%20Justice%22%20edited%20by%20Julian%20Agyeman%20and%20Robert%20D.%20Bullard&f=false
- 2- Berto, Rita. "The role of nature in coping with psycho-physiological stress: a literature review on restorativeness." Behavioral sciences 4.4 (2014): 394-409. <https://www.mdpi.com/2076-328X/4/4/394>
- 3- Bostic, Raphael W., et al. "Health in all policies: the role of the US Department of Housing and Urban Development and present and future challenges." Health Affairs 31.9 (2012): 2130-2137. https://www.researchgate.net/profile/Rachel-Thornton/publication/230722193_Health_In_All_Policies_The_Role_Of_The_US_Department_of_Housing_And_Urban_Development_And_Present_And_Future_Challenges/links/595e72baa6fdccc9b17fda26/Health-In-All-Policies-The-Role-Of-The-US-Department-Of-Housing-And-Urban-Development-And-Present-And-Future-Challenges.pdf
- 4- Bratman, Gregory N., J. Paul Hamilton, and Gretchen C. Daily. "The impacts of nature experience on human cognitive function and mental health." Annals of the New York Academy of Sciences 1249.1 (2012): 118-136. <http://willsull.net/resources/BratmanHamiltonDaily2012.pdf>
- 5- Duany, Andres, et al. "The smart growth manual." (2011): 89-90. <https://www.tandfonline.com/doi/epdf/10.1080/15487733.2011.11908078?needAccess=true&role=button>
- 6- Elmqvist, Thomas, et al. "Benefits of restoring ecosystem services in urban areas." Current opinion in environmental sustainability 14 (2015): 101-108. <https://www.sciencedirect.com/science/article/pii/S1877343515000433>

- 7- Fainstein, Susan S. *The city builders: property development in New York and London, 1980-2000*. Studies in Government & Public, 2001.
- 8- Ingram, Mrill. "Urban ecological restoration." *Ecological restoration* 26.3 (2008): 175-177. https://www.researchgate.net/profile/Mrill-Ingram/publication/250231534_Urban_Ecological_Restoration/links/56cfb21c08ae85c82344ad1c/Urban-Ecological-Restoration.pdf
- 9- Jacobs, Jane. "Jane jacobs." *The Death and Life of Great American Cities* 21.1 (1961).
- 10- Kaplan, Rachel, and Stephen Kaplan. *The experience of nature: A psychological perspective*. Cambridge university press, 1989.
- 11- Karmanov, Dmitri, and Ronald Hamel. "Assessing the restorative potential of contemporary urban environment (s): Beyond the nature versus urban dichotomy." *Landscape and Urban Planning* 86.2 (2008): 115-125. https://www.researchgate.net/publication/223433110_Assessing_the_restorative_potential_of_contemporary_urban_environments_Beyond_the_nature_versus_urban_dichotomy
- 12- Katz, Peter. *The New Urbanism. Toward an architecture of community*...McGraw-Hill, New York, 1994
- 13- Kellert, Stephen R., and Edward O. Wilson, eds. *The biophilia hypothesis*. Island press, 1995. https://books.google.iq/books?hl=ar&lr=&id=GAO8BwAAQBAJ&oi=fnd&pg=PP6&dq=The+Biophilia+Hypothesis%22+edited+by+Stephen+R.+Kellert+and+Edward+O.+Wilson+&ots=pmv8MDHUv_&sig=hMvuWCszOU5dqYwiV7M5iN8YP5w&redir_esc=y#v=onepage&q=The%20Biophilia%20Hypothesis%22%20edited%20by%20Stephen%20R.%20Kellert%20and%20Edward%20O.%20Wilson%20-&f=false
- 14- Klaus, Valentin H., and Kathrin Kiehl. "A conceptual framework for urban ecological restoration and rehabilitation." *Basic and Applied Ecology* 52 (2021): 82-94. <https://www.sciencedirect.com/science/article/pii/S1439179121000372>
- 15- Lawton, Emma, et al. "The relationship between the physical activity environment, nature relatedness, anxiety, and the psychological well-being benefits of regular exercisers." *Frontiers in psychology* 8 (2017): 1058. <https://www.frontiersin.org/articles/10.3389/fpsyg.2017.01058/full>
- 16- Palomo-Navarro, Álvaro, and Julio Navío-Marco. "Smart city networks' governance: The Spanish smart city network case study." *Telecommunications Policy* 42.10 (2018): 872-880. <https://www.sciencedirect.com/science/article/abs/pii/S0308596117301507>
- 17- Rasoulpour, Hazhir, and Farzin Charehjo. "The Effect of the Built Environment on the Human Psyche Promote Relaxation." *Architecture Research* 7.1 (2017): 16-23. https://d1wqtxts1xzle7.cloudfront.net/52105930/10.5923.j.arch.20170701.02-with-cover-page-v2.pdf?Expires=1635094835&Signature=Vv93I6Ne4uQw~PMSpT1Kym0ug686yptZdP-viWp27NbTViXwZJN3hE~LETfBfx9e3frwPtPEUVUc2770LsSzIqZ~1ILVCBKMthKA24jEuotQhyeiBaSSD7uc6csSrl-jIWSgzP2~HXgO3RBgfOIWjE4NMn2R7raMrmpPn4k648JNIPAr9kVOnXTLxKuZ6lXjY7gPsiOridi41QN9X2jcvBpSno5FChEiBtFytDtwS5QzSqqCZzS1zsk3vmdYUaJcULC24FMyoXtd7QREibDnoICswxW~88AugDh045in-MDI07PgoyQSE9MN0XsJfQjFY2O1tldB5d73VcA3GC9g__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA
- 18- Robinson, Sarah& Juhani Pallasmaa," *MIND IN ARCHITECTURE NEUROSCIENCE, EMBODIMENT, AND THE FUTURE OF DESIGN* ", MIT Press Cambridge, London, England,2015
- 19- Ulrich, R. S., I. Altman, and J. F. Wohlwill. "Human Behavior and Environment." (1983): 85-125.
- 20- Ulrich, Roger S., et al. "Stress recovery during exposure to natural and urban environments." *Journal of environmental psychology* 11.3 (1991): 201-230.
- 21- Weber, Anke Maria, and Jörg Trojan. "The restorative value of the urban environment: a systematic review of the existing literature." *Environmental health insights* 12 (2018): 1178630218812805. <https://journals.sagepub.com/doi/full/10.1177/1178630218812805>

- 22- Williams, Florence. *The nature fix: Why nature makes us happier, healthier, and more creative.* WW Norton & Company, 2017.
https://books.google.iq/books?hl=ar&lr=&id=8k18DAAAQBAJ&oi=fnd&pg=PT6&dq=The+Nature+Fix:+Why+Nature+Makes+Us+Happier,+Healthier,+and+More+Creative%22+by+Florence+Williams&ots=6VVmhfBe-3&sig=o4ZQzb2ImCcVtPeC2shRP7KkKXk&redir_esc=y#v=onepage&q=The%20Nature%20Fix%3A%20Why%20Nature%20Makes%20Us%20Happier%2C%20Healthier%2C%20and%20More%20Creative%22%20by%20Florence%20Williams&f=false
- 23- Xia, Xiaotang. "The principle and method of urban ecological restoration planning." 5th International Conference on Civil Engineering and Transportation. Atlantis Press, 2015
<https://www.atlantis-press.com/proceedings/iccet-15/25845245>