

Urban sustainability in urban reconstruction projects for affected cities (The city of Nasiriyah case study)

Al-Adday Ahmed Razzaq^{(1,2)a}, Prokopenko Vyacheslav Valentinovich^{(3)b}

¹Graduate student of the Institute of Architecture, Volgograd State Technological University, Workers 'and Peasants' D.21, , 400074, Volgograd, Russian Federation.

²Al-Ayen University/Iraq

³Candidate of Engineering Sciences, Docent, associate Professor of the Department of Urbanism and architecture theory, Volgograd state technical University (VSTU), 28 Lenin Avenue, Volgograd, 400005, Russian Federation.

E-mail: ^(a) a_razzaq@bk.ru, ^(b) v.v.p_24@mail.ru

Article History: Received: 11 January 2021; Revised: 12 February 2021; Accepted: 27 March 2021; Published online: 10 May 2021

Abstract. This paper examines that wars have imposed on some countries a state of haste and rush to random and ill-considered urban planning to fill the shortage of architectural elements and urban formations. Urban sustainability, along with environmental and economic sustainability, has recently gained great importance in contemporary global studies. In view of the problems that the city of Nasiriyah suffers from in Iraq at the level of architectural formation and devastating environmental pollution, in addition to the great deficit in finding the necessary design solutions for the urban rehabilitation of the city. It was necessary to limit individual attempts that move towards unconscious perceptions and lead to perversion and disharmony with the city's private surroundings. Urban formation is a series of visual interactions that cannot be intercepted by individual, personal, and ill-considered attempts. Therefore, it is necessary to formulate common visions agreed upon by specialists in many fields, chief among them the environment. Hence, the research tends to find research areas that can provide objective solutions suitable for reality to be a basis for the future structure of affected cities within the framework of the concept of sustainable urban development in the future. The research aims here to choose the best way to form the modern city of Nasiriyah.

Key words: urban sustainability, architectural elements, environmental requirements, reconstruction and rehabilitation of Nasiriyah

Introduction

Some specialists have identified urban planning as the purpose for which areas can be designed that can contribute to raising the social, environmental and cultural level of the regions. And that is through theoretical strategic plans that can set clear steps to implement those strategies and plans through the optimal use of available resources and wealth and go towards discussing possible phenomena of events through objectively organized plans, whether at the general strategic level or the special tactical level. Architects and city planners, as well as other professionals, must accept the fact that improving the environmental, social and economic conditions of a society is closely related to the smooth and optimal use of resources and the reduction of environmental costs on the ground (1). The contemporary trend today is to create an urban infrastructure characterized by continuity and to preserve the existing or even the heritage, and to have serious and important results in the way of building and formulating urban spaces. In itself, it is an important and strategic goal for planners and designers, and it highlights the environment as a research space that requires stopping by respecting and restricting its limits and effects on the environment. This concept is directly related to societal, cultural, economic, and long-term health issues, all of which affect the environmental situation and the natural resources necessary for human life. The concept is also related to the continuous development process with the aim of formulating plans whose results are successful and achieving ambition. Consequently, there are restrictions that control the progress of the development process on the social, economic and environmental space as a single unit and an integrative and inclusive concept. The main challenge facing the architecture and city planner today in

the city of Nasiriyah is the best way to be applied on the ground to formulate sustainable formations characterized by successful solutions in terms of quantity and quality as well as in the extent to which they provide psychological and material comfort to the occupants of those places and this is what the research will deal with through comparative study and analysis.

1. Goal, Tasks, Methods of Study

The increasing urban growth in the city has led to an unsustainable urban expansion, and therefore this paper aims at the possibility of adapting city centers to the conditions of continuous population increase, the sustainability of the city center through the application of sustainable urban intensification methods, utilization of land in the city center, and the development of vacant lands in Urban areas, creating social integration in the city, and the research was based on an inductive approach by focusing on describing and analyzing the concept of urban sustainability, and a gradual approach towards presenting the concepts associated with it through schools and intellectual orientations that focused on the subject directly, in addition to presenting the intellectual and creative theories that It can help in building and shaping cities according to contemporary urban planning theories and matching them with the planning and urban reality of the disaster-stricken cities in general and the city of Nasiriyah in particular, in order to learn about the possibilities of formulating a distinctive strategy, especially for the city of Nasiriyah. The study also aims to find architectural and urban solutions that can achieve objectivity in reconfiguring the city of Nasiriyah by producing a distinct experience that can contribute to the effective integration between planning science and sustainability concepts in urban and architectural formations. The study will show some applicable and targeted methods to reach sustainable urban planning and design. The search limits were in the Levantine region within the current master plan for the city of Nasiriyah from 2020-2045.

2. Experimental Part.

A. Discussions of experiences simulating the problems of the city now.

In this part, we review some of the successful global urban study through which defects were diagnosed and appropriate solutions were installed, which helped it overcome the defects of the first formation of the city, and we will present the objective reasons for choosing the experiment according to the case of the city of Nasiriyah today, as it was applied successfully, so it was the real nucleus of cities with new concepts at the time.

▪ George Houseman's project to remake Paris (1853- 1870).

There is a similarity between the case of Paris in that era and that of the city of Nasiriyah today, as it is considered a dilapidated urban center that can be classified from the urban backward centers where the slums that were formed after the year 2003 and the failure to absorb the expansion of the city, which stopped since the seventies of the last century, and the urbanization movement stopped completely during the Iran-Iraq war and even Today, it has been supplemented with solutions for patching it, in addition to not accommodating the existing roads for the large size of vehicles and the resulting traffic nodes and problems in some joints of the city. The treatments carried out by local governments were localized, such as link bridges, which were ineffective.

George Eugene Houseman reworked the Old City with design and construction work that transformed an estimated 60% of the Old City's area into meticulous and humane urban formations. Hausmann activated the concept of regional and functional separation in the city as he literally separated recreational and work areas, announcing the emergence of modern functionalism for cities. It was expanded in many roads and divided them professionally according to the size, so the Grand Army was the great street, which gave the city the ability to accommodate the vehicles as well as facilitated the process of moving between the center and the periphery and also gave it a creative visual axis that made the city an urban value (2)

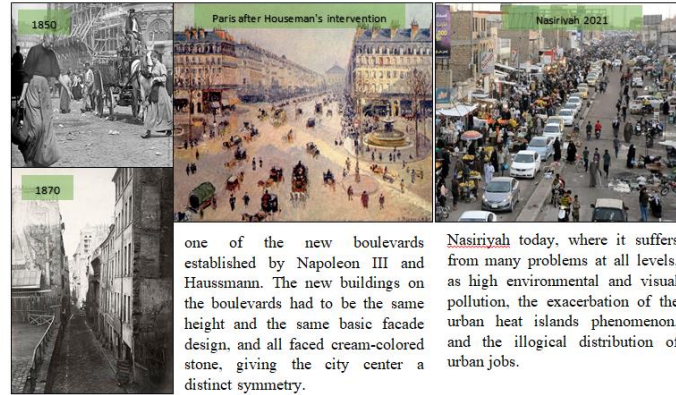


Figure 1. Areas in a suburb of Paris before and after the modernization, adding a new picture from an area in the city center of Nasiriyah (the researcher)

Garden Towns - The Ebenezer Howard Project in 1898.

The city of Nasiriyah has been characterized throughout history by its green spaces, but because of the disasters that befell it, including wars and general depletion of green lands and orchards and encroachment on the municipal lands , its green areas have turned into a bulldozing land due to the lack of care, drought and the unfair encroachment of the city on its green districts and turning them into residential areas through A major leveling of agricultural areas in the countryside and converting them to residential areas, and thus the high level of pollution, which led to a dramatic rise in the temperatures of the city of Nasiriyah as a result of the exacerbation of the phenomenon of thermal islands of the city. Howard called for building a new kind of city, and the idea is that there are three magnets that converge in a circular motion and provide its residents with a mixture of city advantages, country advantages, and getting rid of disadvantages. The industrial zone is separated from other areas that provide good functional and environmental isolation, the (rural - urban) magnet invented by Howard (3). It has been directed towards combining the concept of the countryside and its beauty, along with social treatments that take the advantages of the countryside and the city in a public utilitarian framework. He concluded that the community will improve its ways of life and ways of life by adopting new, innovative and even revolutionary methods, which are the garden city lifestyle 4.

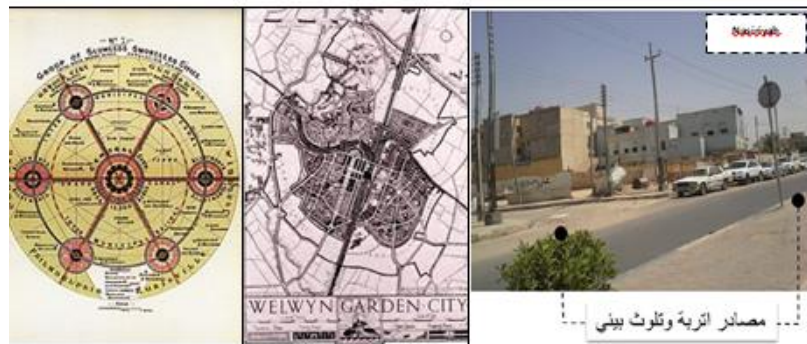


Figure 2. Shows the garden city "Leitchort" in Britain accompanied by the shape of open spaces in the city of Basra today (the researcher)

- **Project "Arturo Surya Mata" in the Strip City(1844 -1920)**

The economic condition of the city associated with the abundance of oil and its spread over a large area of the city has greatly prevented the natural expansion of the city, since these areas are subject to federal law, which prohibits their sale or disposal and considers them as lands belonging to the Ministry of Oil, which prevented its local government from making decisions that determine the axis of development. The future of the city is clearly visible. In addition to the dilapidated urban situation, the city does not have an urban façade or even important road fronts, whether they are historical, since most of them have been destroyed by excesses, time factors and neglect, or even contemporary, in addition to the fact that the city's topography is flat, in addition to the unfair distribution of its services and its positioning in the center. The stripe or linear city is a single main road for functional connectivity and a series of parallel specialized functional sectors, in addition to secondary roads designated for pedestrians in order to provide the safety element for the population from the movement of cars, and the designer took in his imagination the repetition of the distribution of service jobs required for each residential area and on both sides of the main street. In the middle of that agricultural region is an agricultural area (5). And this matter made the tape limited in depth, but it continued in extension and at the distance and length of the strip axis, and this matter provided the possibility of flexible expansion of the city, which made the idea functionally acceptable by providing the direction of future expansion, and making services connected tightly and making the city multiple functions.

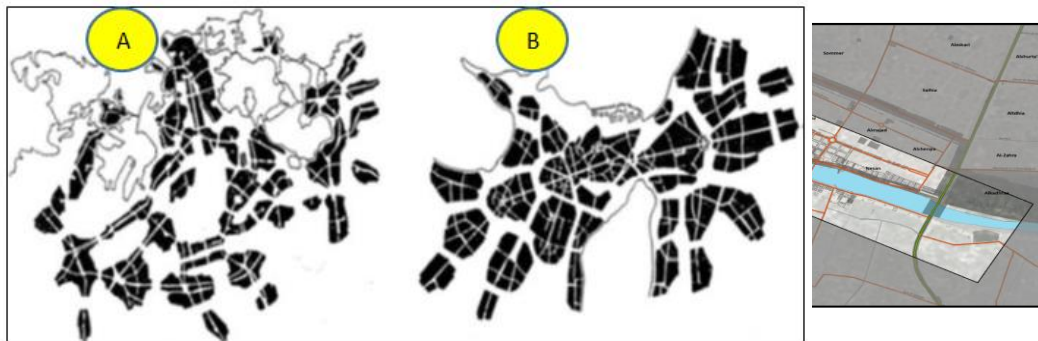


Figure 3. a.Application of the city strip theory to the city of Madrid , b. The present-day Nasiriyah, where the urban fabric is similar to the strip city (the researcher).

- The "Gottlieb Eliel Saarinen" project in the fracture of urban centrality in 1894

The city of Nasiriyah is considered one of the most crowded cities in Iraq. Some of its reasons are due to the concentration of most of its services in the center, which causes a great burden in absorbing the center for this large number of residents and vehicles in certain hours in addition to the problem of the center's acquisition of most of the services and institutions of the city, which constitutes a clear imbalance in the distribution of The city planner Gottlieb Eliel Saarinen activated the principle of decentralization in the field of city planning in the project to reformulate the city of Helsinki, and to start planning and designing cities (6). He was able to overcome some of these difficulties, so he started implementing his project in 1894, with a length of 5 km, and financially supported the idea and the project in 1910, and the city is a suburban strip of low-rise housing units along an axis of the tram railway parallel to a main street. He broke the culture of position maximization among the population, as the proposal presented by "Saarinen" is based on a long-term replacement process that extends to nearly fifty years (6).

Urban planning and environmental principles for city reconstruction

Building an objective process for urban development in the city of Nasiriyah requires activating all the urban determinants therein, starting from the psychological, socio-cultural, functional, geographical and climatic aspect, and not another determining the population. It is a complex process, but it is possible. What the city of Nasiriyah went through made it one of the cities that underwent coercive factors and limitations that stopped the wheel of urban development there for decades. For the sake of the solution,

the concepts of sustainability must be applied in the existing urban formation of the city of Basra according to the formulas of ambition and objective reading of the population, climate, psychological and other problems and requirements. There is no ideal scheme that can be applied to the city of Nasiriyah after the huge amount of negative accumulations in the city's situation, and in order to activate the process of urban development in an objective and ideal manner, the following discussions and recommendations must be adopted:

1. Activating the cultural, social and psychological dimension in the process of shaping the urban dimension of the population- Psychological research should be based on any urban planning and design process due to the negative effects of wars and the period of siege on the psyche of the visual citizen. Here, research working groups should be formed with the participation of the architect, urban, social and psychologist specialists, leaders of the regions in which the development is taking place, and important civic personalities. The studies deal with the psychological aspect of society and the possibility of activating the community in the tasks of raising the spirit of belonging to the city by activating the theory of appreciative inquiry, through which the painful memories related to the past are covered, which are part of the needs to the ambition space associated with the bright future and what aspires to it through the memory of interactive imagination. Comparative Creative (8)

2. Activating the sustainable environmental dimension in the planning and design processes for urban elements and spaces - Activating the concepts of sustainable eco-cities by applying the theories of biophilic¹ cities, where the green space functionally enters as a basis in the formation of the urban fabric (9). Sustainable cities depend on reducing environmental costs to the maximum extent possible and maximizing the ideal use of renewable energy sources (6). Activating the concept of integration and functional integration of the various functions of the city through the policy of realizing the concept of organic cities, so that all aspects of life in the city are integrated in an accurate manner. So places of work, entertainment, entertainment and housing are close together in a way that facilitates movement and reduces the need for transportation to a minimum (10) .

3. Activating the principles of the comprehensive plan in a real way without changing or overriding the terms and standards of the established plan- Comprehensive planning in the case of the affected cities must be understood as an important and essential means of action, and it represents an important stage in the research and design process. The determinants that must be taken into account in the study of the current situation and one of the most important plans for the objective urban application within the framework of the comprehensive plan is based on the adaptation of the urban functional model linked to the needs of the population. With the candidate space model to locate the jobs on it, where they should be positioned in an ideal way, and this can be achieved through several levels (11). Bringing together all the alternatives that need to be formulated in the possible urban structure, whether through reforming the existing through the process of reform or restoration or the development of new urban structures that can replace the old ones (12).

4. Objective activation of the concepts of urban development in the city of Nasiriyah through a scientific restructuring process for the existing urban reality- Any comprehensive scientific restructuring process requires achieving a rebalancing of the city's functions again by achieving homogeneity in the characteristics of the city's urban system. Here, the term urban job should be understood as a determinant that produces the characteristics of the urban system of the city, which generates the concept of urban functional requirement and job performance, which depends on the ability to preserve the urban system. It is understood from preservation to make it in its unchanged state, and the distinguishing feature here is the positive feature that contributes effectively to formulating the system (13). The important act in the process of urban restructuring is mainly related to the act of reorganizing

¹ "Biophilic city" are cities that integrate their formulas with nature, and they are generally green, and their diverse biological formations receive great attention from the population. And it does the environmental dimension in every aspect of its formations. The life of the inhabitants is linked to pristine obedience or the various biological formations, whether on the ground or through museums, parks and nature reserves.

the elements, which is the basic component of the system, by activating the state of integration and integration between the architectural elements and the place as an important means in the process of reorganizing and arranging the life of the population, which is characterized by complexity. As these treatments take different means and methods according to three levels, which are (analytical operational treatment, psychological treatment, and ethical treatment) (14). Here, the human feeling must be introduced as an important component of planning bodies and institutions, as well as decision-making elements. And to take into consideration the basic needs of society (15).

5. **Effective determination of the methods of land works in the city by:** numbering areas, determining the area, segments, and specifications of the population and the density of their presence for each area, determining a specific scale for the gradation of the classification of areas according to population density, making a statistical table on a statistical panel, using two or more variables to obtain curves Graphic, the formation of axes through which the aforementioned values meet in order to compile the results and draw summaries(16).

6. **Activating the principles of sustainable planning through the process of urban restructuring of the city according to the principle of urban addition** - the process of scientific activation of the process of urban restructuring through functional additions is involved in the space of re-arrangement, organization or formulations of the required elements within the framework of a comprehensive integrated system that restores the intended areas to activate them within the framework of the city. And the process goes into the urban transformation of spaces after the need has ceased to exist, which requires change. Here, the process must be linked to a multi-functional zoning process. The restructuring process tends towards the introduction of the term “integration” as an important means, as it effectively interferes with the process of organizing life in the urban context (17).

- **Achieving additions by applying the linear (stripe) city theory in some joints of the city.** This theory is considered one of the most successful theories that can be applied in the case of Nasiriyah. On the linear axis of integration and functional integration of urban areas, point centers can be formed that can define the main axis in the concept of the linear city. The sprawl axis takes public roads and urban interconnection networks as an orientation and openness on the ground. And on the approaches to roads, the urban fabric is being formed. All of this is taking place within the framework of the urban restructuring process, whereby successive urban spaces. The corridor allows for the provision of public transportation in a regular and thoughtful manner that can reduce to the maximum extent the use of private transportation. And the design allows providing an urban living environment for residents in addition to raising the level of community security in an environment where private security is widespread, and the additions include additions of service and commercial institutions that also allow activating community communication among the population

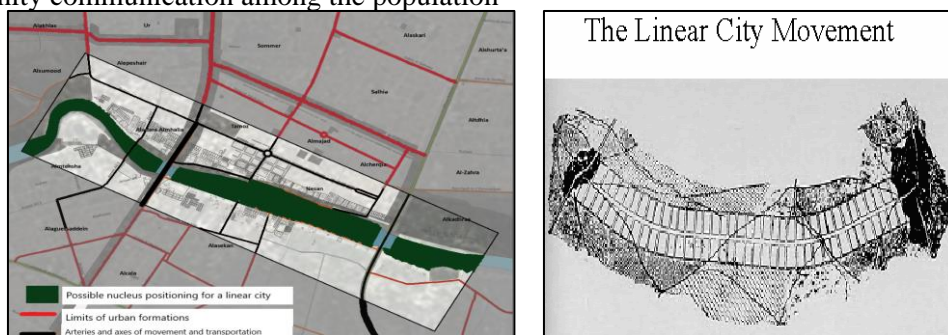


Figure 4. model of a strip city in the city of Nasiriyah (the researcher)

In the city of Nasiriyah, at the intersection of Al-Souq Street and Al-Karaj Street, there is a strip that extends along Baghdad Street, 3 km long and 150 m deep. It currently possesses approaches whose functions can be changed as a public service, to be the nucleus of an urban project whereby a linear city can be formulated containing all urban services and institutions, which are identified with the participation of the local population. It is one of the possible solutions to the urban reform path in the city

of Nasiriyah, which suffers from the pressures of the Ministry of Oil that limit the creation of axes for urban development.

- **The application of the addition through modernizing the city by upgrading the road facades of the architectural formations adjacent to the main arteries of the movement-**The quality of a city is closely related to the value of its urban facades. Here, the shape of the city can be transformed from complete and comprehensive urban areas, and here the conversion process includes various development processes on the total area of the city and this is what costs the budget huge sums of money and we do not reach the desired results in a manner similar to what happened in the Houseman project in France, which cost the French treasury at the time about one billion and a hundred million French franc (18). Or the transformation of the city into urban facades. Development takes place only on the facades and their architectural formations. Consequently, the city turns into facades that reflect a civilization, and this is what the research suggests. The quality of urban spaces and squares of any city is related to the formula of the formation of facades on the side of roads.

Here, thoughtful formulations based on defining the structural elements of the façades can be supplemented with the following determinants:

- Choosing building materials that are subject to environmental standards (19)
- Determination of heights on a deliberate urban basis
- Determine the colors that suit the overall aesthetic, environmental and climate formation
- Determine the plastic sizes that should form shadows that serve the climatic formation process (20).
- Determination of vertices for high-value optical axes at road edges
-

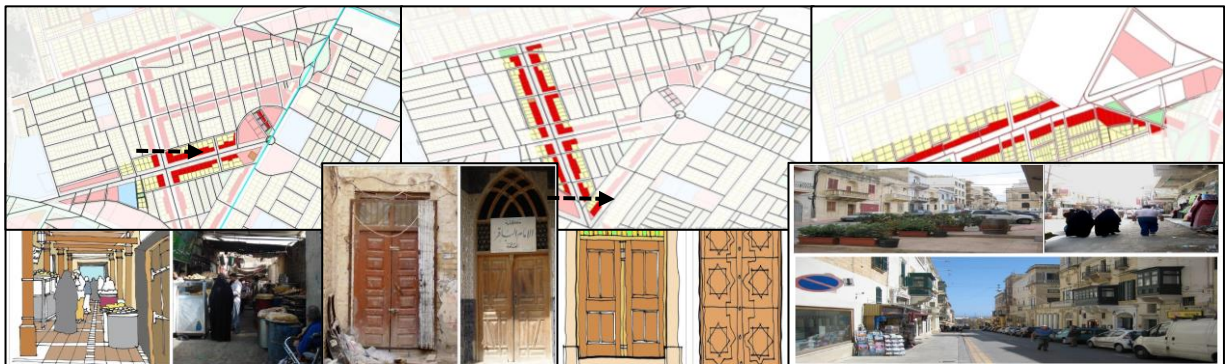


Figure 6. Models of three streets that are considered the lung of the city, illustrated in which a model for developing the doors of commercial interfaces and others, a model for developing central markets, a model for developing the urban landscape for streets through the elimination of random advertisements

As for the residential side, it will be by renewing the current urban residential neighborhoods (the second district of Ur is a study area), and new residential neighborhoods with a plan for residential areas.



Figure 7. A; New residential neighborhoods B Reconstructing urban neighborhoods (Ur-II region)

3. conclusion and recommendation

1. We can realize the size of the problem that the city of Nasiriyah suffers from, as the initiation of a restorative reconstruction process in accordance with the concept of reactions to urban problems will make that process very costly and useless and does not achieve high-end urban goals. Rather, it can provide the vocabulary that the city may need to work individually and limited, and this does not hurt. In favor of the city's function in general, which makes it a unified formation. The current situation in Basra is moving towards repairing the mistakes of the past. Also, the reality of the restoration is proceeding according to non-uniform plans and is not linked to a general strategy for the city.
2. There is no real comprehensive master plan for the city, and there is a lack of organization in the comprehensive planning projects as well as reconstruction projects.
3. It can be concluded that the current situation of the city is based on a real traffic crisis, as the city center is experiencing a negative state of traffic movement, which is due to some of its reasons because most of the important urban jobs are stationed there and therefore the map of vehicle and population movement in the city is carried out according to distorted formulas that are not homogeneous with the public space. This created a stifling contract for the traffic movement, especially in the center or the intersections of some of the traffic arteries, as occurs in intersections such as "the municipality lobby," Al-Zaytoun, and many other areas.
4. Forming a city reconstruction committee consisting of specialists (planners, architects, engineers, administrators, etc.) to be responsible for developing long-term plans to reform the current conditions and plan for the future.
5. Preparing studies on rural development in the outskirts of the city, as this matter will contribute to shaping justice in the distribution of services to the population in a way that greatly limits the phenomenon of migration and thus the imbalance City.
6. Preparing special research and architectural designs with the aim of formulating high-value urban riverfronts by adopting plans to form high-end urban spaces on the Euphrates River frontage and adopting a private social arena that helps in creating high-value community attractions worthy of human value as it relies a lot on investment laws, such as the city of Sydney. Australian and Dubai Emirates.
7. Developing a public transport strategy that limits the increase in the emission of carbon dioxide in the atmosphere, and this matter requires a revolutionary approach in planning and defining urban areas with precision and care, and the introduction of appropriate transportation means that can reduce energy use and thus heat emissions.
8. Giving great attention to public urban spaces located between construction formations, which are no less important than focusing on the formations themselves. And that its components are treated in an environmentally friendly manner that does not allow them to be left as empty spaces that turn at a later time into a source of dust and pollution.

4. References

1. Charles Montgomery , (2014) *Happy City: Transforming Our Lives Through Urban Design*, Farrar, Straus and Giroux, Pp 267-273.
2. David H. Pinkney 1972, *Napoleon III and the Rebuilding of Paris* (Princeton, N.J.: Princeton University Press, P 127.
3. Howard, Ebenezer (1902) *Garden Cities of Tomorrow* Attic Books New Illustrated Edition 1985, Pp 276
4. Goodall, B. (1987) *The Penguin Dictionary of Human Geography*. London: Penguin. *The Great Stink of Paris and the Nineteenth-Century Struggle against Filth and Germs*, First Edition, The Johns Hopkins University Press, 2006.
5. Ali, A. S., Roomi, A. B., Ali, H. H., & Fadaam, S. A. (2020). Comparative study between summer and winter of selected heavy elements in water, sediment and two species of aquatic plants collection from al-gharraf river near al-gharraf oil field- thi-qar province - iraq. Paper presented at the IOP Conference Series: Materials Science and Engineering, ,928(6) doi:10.1088/1757-899X/928/6/062010.

6. Liana Iliu 2005 , Orasul – Gradina si evolutia conceptului ,Editura Universitara , ION MINCU , Pp 213 – 235
7. Register, Richard (1987). *Ecocity Berkeley: building cities for a healthy future*. North Atlantic Books.
8. Barthel, S., Folke, C. and Colding, J. (2010) *Social – ecological memory in urban gardens: retaining the capacity for management of ecosystem services*, global environmental.
9. Amjad Al-musaed 2007. *Heat Island Effects upon the Human Life on the City of Basrah, Building low energy cooling and advanced ventilation technologies the 21st century*, PALENC 2007, The 28th AIVC Conference, Crete island , Greece.
10. Dietzel, C., et al (2005), *Spatio -temporal dynamics in California’s central valley, empirical links to urban theory*, *International Journal of Geographical Information Science* , 19, 175 – 195.
11. Randall Thomas (2003), *Sustainable Urban Design, An environmental Approach*, Spon Press, Tyler & Francis Group, London And New York, Pp. 89 -95.
12. Ferris, J., Norman, C. and Sempik, J. (2001), *People, Land and Sustainability: Community garden and social dimension of sustainable development*, *Social Policy and Administration* Pp. 490-504.
13. Robert A. Francis and Michael A. Chadwick, (2013) *Urban Ecosystems*, Earthscan (Routledge), London and New York, Pp 74-78.
14. Clergeau, P. et al, (2011) *Amplified method for conducting ecological studies of land snail communities in urban landscape, ecological research* Pp 515 – 523.
15. Adolf K. Placzek, ed (1982). "Leonard Stokes". *Macmillan encyclopedia of architects*.
16. The Garden Cities Association (later to become the Town and Country Planning Association or TCPA)
17. Van der Veken, et al , (2004) *Plant species loss in an urban area*, *Flora*, Pp. 316 – 323.
18. Baek, Y.W, and An J . (2010), *Assessment of toxic heavy metals in urban lake sediments as related to urban stressor and bioavailability*, *Environmental Monitoring and Assessment*, Pp 529-537.
19. Myer, W. B., 1991, *Urban heat island and urban health: Early American perspective*, *Professional Geographer*, 43 No. 1, 38-48.
20. Amati, M , (2008) *Green belts: a twentieth – century planning experiment*, London, P 264.