

# Reshaping the urban street: a case study(Saadoun Al-Suwaihli Street) Misrata

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| Article information                                | Abstract                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| <b>Key words</b><br>Urban design<br>Woonerf street | This research paper focused on urban design principles, particularly concerning Saadoun Al-Suwaihli Street in Misrata. It highlights the significance of streets as public spaces for social interactions and community vitality. The research emphasizes the need to balance pedestrian needs with vehicular traffic, addressing issues like congestion, parking shortages, and neglected public areas. Through various data collection methods, including field visits and surveys, the study identifies key challenges and proposes solutions for urban revitalization. Suggestions include reopening blocked intersections, creating parking facilities, revitalizing public spaces, and enhancing pedestrian amenities. The vision for the street aligns with creating a 'woonerf' environment, prioritizing pedestrian safety and community engagement. The study draws on a conceptual framework to understand the relationship between urban design quality and user perception. Through site analysis and conceptualization, the research provides a comprehensive overview of the street's current state and potential improvements. Overall, the study underscores the importance of creating inclusive, pedestrian-friendly environments to enhance urban livability and foster community well-being. |

## I. INTRODUCTION:

Urban design is the design of towns and cities, streets and spaces. It is the collaborative and multi-disciplinary process of shaping the physical setting for life – the art of making places. Urban design involves the design of buildings, groups of buildings, spaces and landscapes, and establishing frameworks and procedures that will deliver successful development by different people over time. [1]

Streets are the lifeblood of our communities and the foundation of our urban economies. They make up more than 80 percent of all public space in cities and have the potential to foster business activity, serve as a front yard for residents, and provide a safe place for people to get around,

whether on foot, by bicycle, car, or transit. The vitality of urban life demands a design approach sensitive to the multifaceted role streets play in our cities. [2]

Citing [3] Street is the pioneer settlements development in the context of urbanization and one of the essential elements in shaping the city/ town. [4] increase of community in an urban area has created an awareness of the importance of street values as public realm that cater the diverse aspect of daily life. [5]

The NACTO Urban Street Design Guide explains how streets of all sizes are designed according to the following :

\*Streets are public spaces. Streets play a much larger role in the public life of cities and communities than just thoroughfares for traffic.

\*Great streets are great for business. Well-designed streets generate higher revenues for businesses and higher values for homeowners.

\*Design for safety. Traffic engineers can and should design streets where people walking, parking, shopping, bicycling, working, and driving can cross paths safely.

\*Streets can be changed. Transportation engineers can work flexibly within the building envelope of a street. Many city streets were created in a different era and need to be reconfigured to meet new needs.

\*Act now Implement projects quickly using temporary materials to help inform public decision making. [2]

Citing [3] And according to the researchers, there is a difference term between 'street' and 'road'. 'Street' focuses on pedestrian and its activities where the movements slower. Whereas 'road' leading to engineering applications, functional to solve traffic congestion. [6] Thus street design is more complex as to meet the needs of its primary as a 'place' that sparked public arena. The above description indicates the essential street function to 2 types, namely as a 'link' and 'place' as proposed by. [7]

The 'link' is, street as movement channel which involves a variety of users. These include public vehicles (such as car, truck), public transport (such as buses), bicycle and pedestrian. The objective of the 'link' is to reduce travel time in each section of street (save time).

The 'place' is, street as destination location where the activity occurs – associated with pedestrian activity. The objective of the 'place' is so that pedestrians allocate time on the street and to produce a variety of activities such as observing, relaxing and working (spend time).

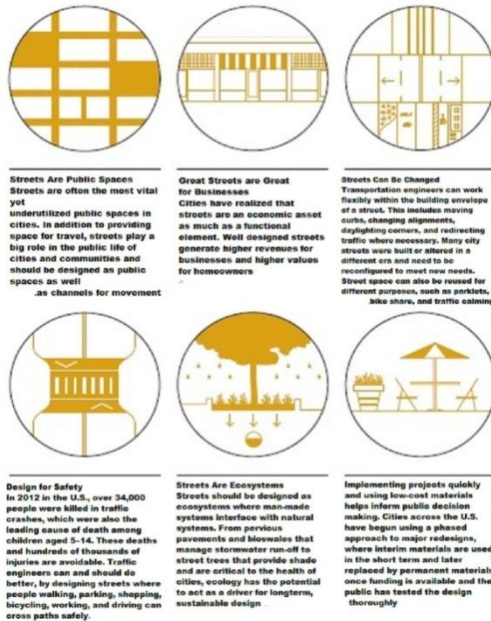


FIGURE1 General concepts [2]

## II. RESEARCH PAPER PROBLEM:

The research paper addresses urban design challenges in Saadoun Al-Suwaihl Street, Misrata, including congestion, parking shortages, neglected public spaces, and inadequate pedestrian amenities. Modern urbanization prioritizes vehicular traffic over pedestrian needs, compromising community well-being. Urban revitalization is crucial to create safer, more vibrant streets and foster social interaction.

## III. VISION (WOONERF STREET):

The vision for Saadoun Al-Suwaihl Street is to transform it into a 'woonerf street,' fostering a shared space where pedestrians, cyclists, and low-speed vehicles harmoniously coexist. Woonerf streets, originating from Dutch urban design, prioritize pedestrian safety and community engagement. They feature shared spaces without curbs, integrating green infrastructure and traffic calming measures to slow vehicular traffic. Achieving this vision on Saadoun Al-Suwaihl Street involves redesigning the layout to remove curbs, implementing speed bumps and roundabouts, and strategically placing parking areas. Community engagement and stakeholder

collaboration are crucial for successful implementation, ensuring a sense of ownership and promoting sustainable urban living. Through these measures, Saadoun Al-Suwaihl Street can evolve into a vibrant, pedestrian-friendly environment, enhancing social interaction and community well-being.

## IV. SPATIAL AND TEMPORAL SCOPE:

This research paper investigates Saadoun Al-Suwaihl Street in Misrata, analyzing urban design challenges and solutions within the area stretching from its junction with Sanaa Muhaidli Street to the Second Ring Road. The study confines its analysis to contemporary issues and proposed interventions, excluding historical contexts.

## V. THE IMPORTANCE OF THE RESEARCH PAPER:

1 - Addressing Urban Design Challenges: The paper sheds light on critical urban design challenges faced by Saadoun Al-Suwaihl Street in Misrata, including congestion, parking shortages, neglected public spaces, and inadequate pedestrian amenities. By identifying these challenges, the research aims to propose practical solutions to enhance the functionality and aesthetics of the street.

2 - Promoting Sustainable Urban Development: Through the exploration of urban revitalization strategies, the paper contributes to the promotion of sustainable urban development in Misrata. By prioritizing pedestrian safety, community engagement, and inclusive design principles, the research seeks to create vibrant and livable urban spaces that foster social interaction and economic vitality.

3 - Fostering Community Well-being: By prioritizing pedestrian-friendly environments and revitalizing public spaces, the research aims to enhance community well-being in Misrata. Creating inclusive and accessible urban environments can promote a sense of belonging, encourage active lifestyles, and strengthen social cohesion among residents.

4 - Advancing Urban Design Principles: The research paper contributes to the broader discourse on urban design principles by highlighting the importance of creating inclusive, pedestrian-friendly environments. By emphasizing the role of streets as public spaces for social interaction and community vitality, the paper advocates for a holistic approach to urban design that considers the diverse needs of residents and visitors.

5 - Providing a Model for Urban Revitalization: Through stakeholder collaboration and community engagement, the research paper aims to provide a model for urban revitalization efforts in Misrata and similar urban contexts. By identifying key challenges and proposing practical solutions, the paper offers insights into how cities can transform existing infrastructure to meet the evolving needs of urban populations while promoting sustainable development and community well-being.

## VI. OBJECTIVES OF THE RESEARCH PAPER:

- 1 - To assess the urban design challenges faced by Saadoun Al-Suwaihl Street in Misrata, focusing on issues such as congestion, parking shortages, neglected public spaces, and inadequate pedestrian amenities.
- 2 - To propose practical solutions and urban revitalization strategies aimed at addressing the identified challenges and enhancing the functionality and aesthetics of Saadoun Al-Suwaihl Street.
- 3 - To explore the concept of 'woonerf' streets as a potential model for urban design, prioritizing pedestrian safety, shared spaces, and community engagement within the context of Misrata's urban environment.
- 4 - To contribute to the broader discourse on urban design principles, highlighting the importance of creating inclusive, pedestrian-friendly environments to improve urban livability and foster community well-being in Misrata and similar urban contexts.

## VII. RESEARCH PAPER METHODOLOGY:

This study adopts a comprehensive research approach blending qualitative and quantitative methodologies. It utilizes field observations, surveys, interviews, and visual assessments to gather data. Qualitative analysis delves into identifying urban design complexities and stakeholder insights, while quantitative analysis scrutinizes survey data to gauge user perceptions and preferences. This methodological fusion aims to offer nuanced insights into Saadoun Al-Suwaihl Street's urban dynamics and propose viable revitalization strategies.

## VIII. URBAN DESIGN TODAY:

The term 'urban design' was coined in North America in the late 1950s, and replaced the narrower and somewhat outmoded term 'civic design'. Typified by the City Beautiful Movement, civic design focused largely on the siting and design of major civic buildings – city halls, opera houses, museums– and their relationship to open spaces. Urban design denotes a more expansive approach. Evolving from an initial, predominantly aesthetic, concern with the distribution of building masses and the space between buildings, it has become primarily concerned with the quality of the public realm – both physical and socio cultural and the making of places for people to enjoy and use.

Containing two somewhat problematical words, 'urban design' is an inherently ambiguous term. Taken separately, 'urban' and 'design' have clear meanings: 'urban' suggests the characteristics of towns or cities, while 'design' refers to such activities as sketching, planning, arranging, coloring and pattern making. Throughout this book, however, as used generally within the practice of urban design, the term 'urban' has a wide and inclusive meaning, embracing not only the city and town but also the village and

hamlet, while 'design', rather than having a narrowly aesthetic interpretation, is as much about effective problem solving and/or the processes of delivering or organizing development. [8]

## I. URBAN DESIGN OF STREETS TODAY:

Citing [3]: Importance of street in an urban area that is functioning as public open space which encompasses design and character aspect. However, literature and observation found opposite scenario occurs where fast development has eroded the street character. This scenario begins on 20th century, particularly after World War 2, urban design gives priority to motor vehicles which are differ needs with pedestrian [9]. To address such scenarios, the street design approach began to change when 'manual of street design' was first introduced even there are things that can be improved. [7] However, this scenario still occurs either globally or locally that can be categorized into building and landscape which directly affects street/ city pattern.

## II. THE ROLE OF STREET:

Citing [10]: Streets, as mentioned by Jane Jacobs, are regarded as the place of social interactions, vitality and sense of community[11]. Social, cultural and economic lives were the prerogative of streets since thousands of years ago [12]. In fact, this old and traditional space is a symbol of freedom, vitality, face-to-face communication and evolution [13]. With the advent of modernism, the traditional pattern of streets and city structures completely altered. For the modernists, street was a corridor for moving from A to B and the city life was not a significant aspect of it. In fact, with the advent of modernism, streets changed from a place for life to a place for mobility [14]. It is utterly obvious in the projects of Le Corbusier. In the plan of Contemporary City that was prepared in 1922, Le Corbusier presented a complex of towers, open spaces and a new type of street [15]. With the advent of modernism and the segregation between different roles of a street as one of its consequences, this schism also happened between different professions involved in the field of street design. Consequently, urban planners and designers, architects and transportation planners considered projects about street design exclusively related to their profession. [16]

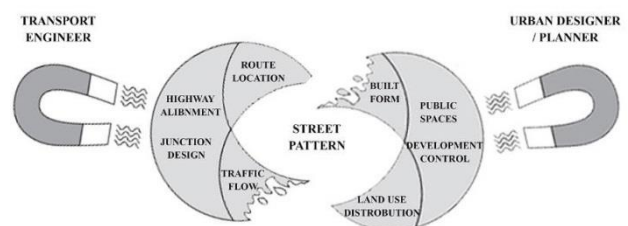


FIGURE2 Street and Street Pattern as a Mutual Field between Different Professions. [10]

## III. SIGNIFICANCE OF STREET AS PUBLIC SPACE:

According to [8] and [11], we can ex-amine the function and form of streets in terms of their qualities which gives

scope for great diversity: visually dynamic or visually static, enclosed or open, long or short, wide or narrow, and straight or curved. In addition, it is stated that the main public spaces of a city are the most vital organs .

On the other hand, in 2014, (Oranratmanee and Sachakul) [17] defined a street as the widest and most accessible public space that creates more possibilities for social activities and connections. It generates several multifunctional spaces and its role should be understood from various perspectives. Therefore, a street can be defined as a physical space, a channel of movement and a public realm, and lastly, as a place.[17]

#### IV. CONCEPTUAL FRAMEWORK:

The research paper is based on the concept derived from (Ewing and Handy 2009). [18] shown in the following Figure . The figure shows a linear relation between walkability, physical features, urban design quality, and user perception of the urban streets. The user reaction depends on physical features and urban design qualities. However, urban design qualities are diverse from individual reactions like the sense of comfort, sense of safety, and level of interest. [18] It reflects individual reaction and assessment of a place but perceptions are simply perceptions. Mostly, the research paper aimed to identify the revival of the streets considering physical features which is an objective measurement process. Urban design qualities, composed of physical features, an intangible character, remain undetermined in the research paper . [19]

Therefore, this research paper purposes to understand the relationship between urban design quality and user interaction with the street, the subject of the study.

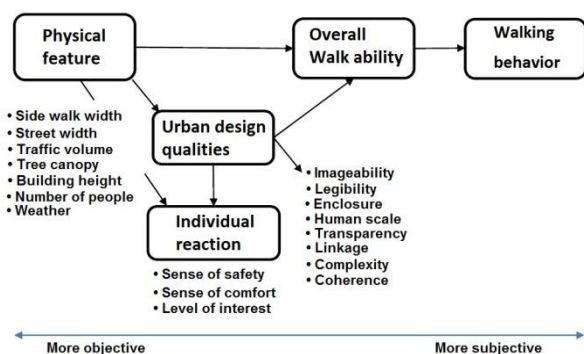


FIGURE 3 shows a linear relation between walkability, physical features, urban design quality, and user perception of the urban streets [19].

#### V. CASE STUDY: PART OF SAADOUN AL-SUWAIHLI STREET, MISRATA CITY AND SCENARIO OF THE CASE STUDY AREA:

The street subject to this study is part of Saadoun Al-Suwaihl Street in Misrata, where it is located in the centre of the city of Misrata from north to south. This street starts from its intersection with Sanaa Muhaidli Street to its intersection with the Second Ring Road. The street is single with two directions. The total length of the part subject to the study is 880 meters.

The street is sometimes crowded in the morning and afternoon because there are educational buildings overlooking the street. There is a garden in the middle of the street overlooking it from the western side. The proximity of the street to the city center is an advantage if used in the correct aspect. The street is a front view of the residential buildings located on the western side, which provides the opportunity to direct the street to become a destination for its users to get used to walking on it, by creating a new culture to reduce traffic congestion.

The presence of the aforementioned park maintains the implementation of the habit of walking, as it is assumed that the park would have seating places and would be a destination for the street users. As for the eastern side of the street, the two aforementioned schools, the residential area and some scattered shops as well as the headquarters of the Chamber of Commerce

and Industry could be facilitated to promote the street's urban revitalization project. However, blocking of the street at its intersection with the Second Ring Road causes people's reluctance to use the street. In the event of rain falls, water floods at the intersection next to the two schools cause immobility at those times. In addition, in the past, there were security problems that are recently set on by the competent authorities. In this part of the street, there are some dispersed shops on the street and the uses of the street are inconsistent. The street has vacant lands that could be used as parking lots, and pedestrian sidewalks have been encroached upon and the street lacks night lighting and seating areas.



FIGURE 4 Satellite image via [20]  
Adding data to the image by (the researchers)

#### VI. PREPARING SAMPLE PICTURES FOR VISUAL ASSESSMENT:

This is necessary to provide a clear scene of the case study area in front of the users during rating. Firstly, the study areas are divided into several parts so that every part of information in street can be captured through photographs. The photographs are taken at similar distances, maintaining equal height so the vista or scale of the street remains unchanged. In addition, a video of the overall site was also collected for live documentation, activity, and the environment of the location. Mapping of the case study area has been drawn on several urban design issues within the street to understand the urban design quality for the user perception.

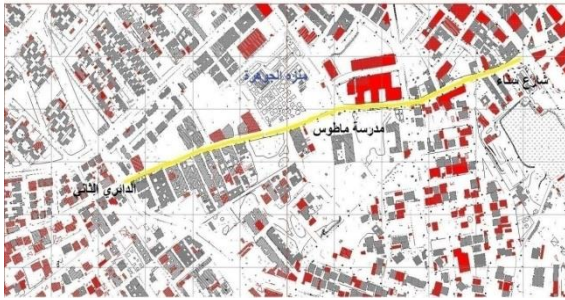


Figure 5: A copy of the aerial photograph of the city of Misrata  
Adding data to the image by (researchers)



FIGURE 6 A copy of the general plan by urban planning for the city of misrata  
Adding data to the image by (the researchers)



FIGURE 7 Pictures from the site taken by (the researchers)

## VII. DATA COLLECTION (QUESTIONNAIRE SURVEY):

Several field visits have been conducted to the street subject of the current study, in multiple periods throughout the day-times and it has also been evaluated through visual assessments, as well as over a self-questionnaire through questioning of the street's visitors and users. An interview has also been conducted with the head of the administrative affairs at the Misurata Chamber of Commerce and Industry. The main parts of the questionnaire survey, which were collecting data, include the questions about the reasons for the unpopularity of the street, the idea of urban revitalization of the street, the people's reactions regarding reviving the street with its diversity in terms of using it, focusing on presenting the idea of paying more attention to the process of strolling and making it a culture among the people of the area, so that the street would be distinguished by the same.

The questionnaire used has also focused on asking questions about the relationship between the quality of urban design and people's general preference for walking. The answers have shown that walking is supposed to be preferable and that this is linked to the quality of urban design. Hence, the preference for walking is a variable dependent on the quality of its design, and the users' answers have stated that pedestrians use the street to meet their daily needs and not for their preference for walking, given that it is a street of a commercial nature. However, the idea has been well received, with the need to link it urbanely to other uses so that a good picture is formed to understand the context in mind and memory.

## VIII. DEFECTS AND PROBLEMS:

The presence of some defects and problems in the work, which makes it less functional and has a distorted visual appearance, as well as disabling its functions. They may include the following issues and problems:

1- Blocking the street at its intersection with the Second Ring Road.

2-There is no parking available in the current state of the street

3-Negligence of the park by not conducting its renovation and maintenance and operating it.

4-Infrastructure problems regarding collection of rainwater floods next to the schools exist in the street, as the street is considered a place for the collection of floods flowing from the neighbouring streets, which is again the reason behind people's reluctance to use the street.

5-Exploitation of pedestrian sidewalks by some shop owners, causing people to refrain from walking on the street.

6-The lack of night lighting has made people use the street only during the daytimes.

7-The street is considered an inconsistent mixture of several uses. 8 Lack of seating places.

13- Development and proposals aspect.

Based on the possibility of diversifying street use regard to the street type as a common area different activities, the idea revolves around reo the street again at the intersection with the Second Road, while developing a solution to the congesti may result from this by making the movement ( streamlined in both directions at the intersection the same time reducing traffic. The movement and quantity of cars are based on dealing with the dimension (time), as well as on the conceptual fram derived from (Ewing and Handy), so that there is a relationship between the possibility of walking and physical features that may result in the solution proposals, as well as with the quality of urban des that in the end we obtain an urban designed street tl pedestrian destination with controlled vehicle traffi

## IX. SUGGESTIONS, SOLUTIONS AND RESULTS

1-Reopening the street at its intersection with Second Ring Road, which may increase the vitality street while developing a solution to the congesti may result from the reopening process by making traffic flow smooth in both directions.

2-Proposing the establishment of parking lots in the current vacant areas, especially near the park, as well as the establishment of parking lots for schools by deducting land from the schools themselves.

3-Revitalizing the urban park and paying attention to the seating areas as well as the pedestrian walk-sides to encourage people to become accustomed to walking in the street so that the street becomes a destination for pedestrians and to achieve the idea of the research paper as well as to serve the first point of solutions and suggestions regarding reducing car traffic, as it is possible to replace using cars to walking in some times as long as the street meets this need.

4-Addressing the problem of high rainwater levels by diagnosing the problem and setting practical steps for this problem by the competent authorities.

5-Focusing on not using pedestrian sidewalks, except for the purpose for which they are designated (walking only).

6-Providing appropriate lighting to enliven the street at night, as this may help reduce car traffic during the daytimes, as some activities may have appropriate traffic in the evening as well as providing lighting at night may help to use the street on foot at night.

7-Reconsidering the uses of the street, including activities, and replacing them with activities that support the idea of reducing car traffic, as well as encouraging people to get accustomed to walking by providing appropriate activities for them, such as cafes and places sitting and leisure.

8-As previously mentioned, emphasis on providing suitable seating places for pedestrian comfort, so that they are properly studied and distributed to serve the idea proposed in this research paper.

## X. SITE ANALYSIS:

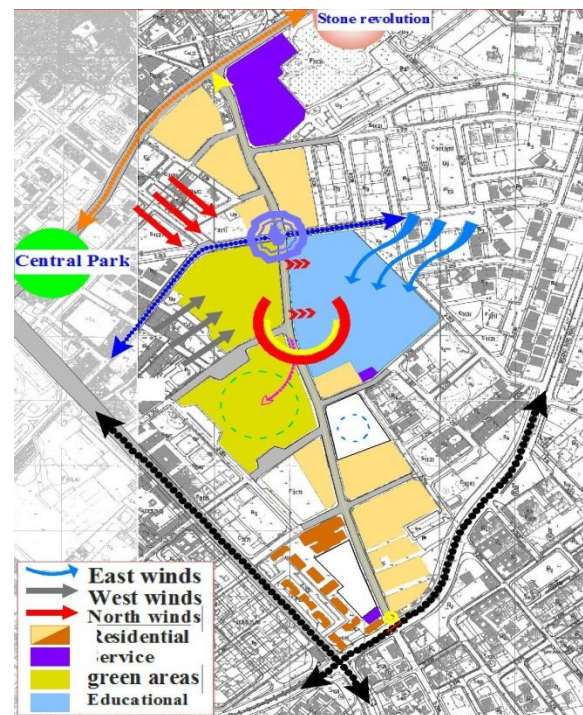


Figure 8: Site analysis by (researchers)

## XI. THE MOVEMENT OF THE SUN ON THE SITE:

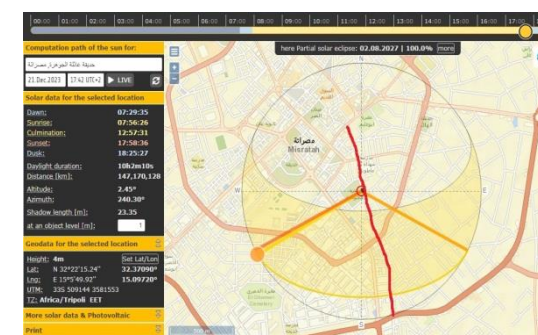
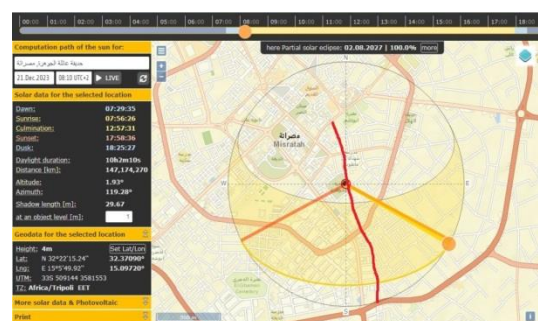


Figure 9 The movement of the sun on the site [21]

## XII. THE MOVEMENT OF THE SUN IN GENERAL:

The apparent motion of the sun, caused by the rotation of the Earth about its axis, changes the angle at which the direct component of light will strike the Earth. From a fixed location on Earth, the sun appears to move throughout the sky. The position of the sun depends on

the location of a point on Earth, the time of day and the time of year. This apparent motion of the sun is shown in the figure below.

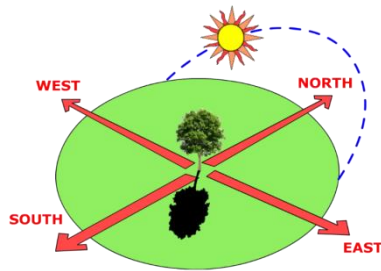


Figure 10: The movement of the sun in general [22]

### XIII. CAR TRAFFIC:

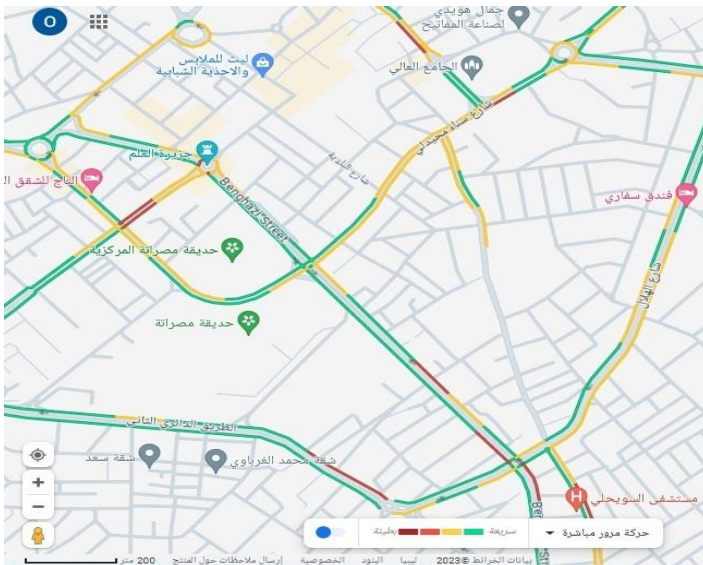


Figure 11: Car movement on the street [23]

### XIV. CONCEPT:

#### A. Street Design Concept Plans (Program Overview,

Concept Plans solidify a vision for street included ; can tie that vision back to other planning and des documents that the neighborhood or City may h developed. Concept Plans are also useful as a vehicle discussion between the permit proponent and the C about appropriate streetscape elements given the adjac land use and the street's operational characterist Source: (Aditi Kambuj Urban Design Manage). [24]

#### B. Urban design for walking:

Well planned neighborhoods can increase tl number of people who walk every day, howe in order for a neighborhood to attain an environment that is conducive to walking it needs to address some principal design issue namely density, diversity and connectiv

Fundamental to successful walk able neighborhoods is the diversity, or mix of uses, creating a higher density texture .of destinations: Destinations are the most elemental aspect of walking for transport. Put simply, people need destinations within walking distance to be able to walk. Locating destinations within 400 meters is ideal. [25]

#### C. Concept of the site:



Figure 12 Concept of the site by (researchers)

### XV. A PROPOSAL FOR URBAN STREET DESIGN.



Figure 13: vision by (researchers)

## XVI. RESULTS AND RECOMMENDATIONS

1 - Urban Design Importance: The study emphasizes the critical role of urban design in shaping vibrant and functional public spaces within cities.

2 - Street Vitality: Streets are highlighted as vital components of urban life, serving as spaces for social interaction, economic activity, and cultural exchange.

3 - Pedestrian Priority: The research underscores the need to prioritize pedestrian needs in street design, balancing them with vehicular traffic to create safer and more accessible environments.

4 - Historical Evolution: The study traces the historical evolution of street design, from traditional community spaces to modern thoroughfares shaped by vehicular traffic.

5 - Challenges of Modern Urbanization: Modern urbanization trends have often neglected the pedestrian aspect of street design, leading to diminished street character and functionality.

6 - Revitalization Strategies: The research proposes various revitalization strategies for Saadoun Al-Suwaihl Street, including reopening blocked intersections, creating parking facilities, and enhancing pedestrian amenities.

7 - Community Engagement: Successful street revitalization requires active community engagement and participation in the planning and design process.

8 - Identification of Deficiencies: Key deficiencies in the current street design, such as blocked intersections, insufficient parking, and lack of pedestrian amenities, are identified through the research.

9 - Holistic Urban Design Approach: The study advocates for a holistic approach to urban design, integrating diverse perspectives and prioritizing walkability, safety, and inclusivity in street planning and development.

In conclusion, the study underscores the importance of reimagining Saadoun Al-Suwaihl Street as a vibrant and pedestrian-friendly urban space, fostering social interaction, economic vitality, and community well-being. Through collaborative efforts and innovative design solutions, the street can evolve into a thriving public realm that enriches the urban experience for residents and visitors alike

## XVII. ACKNOWLEDGEMENTS

We extend our heartfelt thanks to the institutions for sharing information during our academic journey. The contributors to this paper also express sincere gratitude to Dr. Ibrahim Emhemed Abaid for providing them with the opportunity to participate in this paper, as well as for his guidance and support throughout this invaluable study. His insights have profoundly influenced our understanding and scholarly endeavors. We express our deepest appreciation to all who have contributed to our academic journey.

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