We are IntechOpen, the world’s leading publisher of Open Access books
Built by scientists, for scientists

6,600
Open access books available

177,000
International authors and editors

195M
Downloads

154
Countries delivered to

Our authors are among the

TOP 1%
most cited scientists

12.2%
Contributors from top 500 universities

WEB OF SCIENCE™
Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com
Chapter

The Street Edge: Micro-Morphological Analysis of the Street Characteristics of Baghdad, Iraq

Haider Jasim Essa Al-Saaidy

Abstract

In Arabic cities, diversity can be seen in the development of the same underlying order. This assists to manage to qualify well-defined relationships with various levels of movement in the urban setting. The micro-morphological examination is used to emphasise further the spatial pattern at a micro-level within a macro-scale scope. Hence, micro-level studies are essential in evaluating the built environment with regard to private and public domain. Terminologically, the notion of the symbiosis of how the private and public domains interact with each other is needed. Also, there is a need for people to know their rights when using the street edge and the extent to which they (the owner/user) have the authority to modify the public space. The transition of the urban pattern from the traditional order (spontaneous pattern) to the modern model (pre-planned system) not only changes the spatial morphological structure entities but also transformed the association of the private and public domain.

Keywords: street pattern, private control, public control, traditional (spontaneous) order, modern (pre-planned) system, urban symbiotic relationship

1. Introduction

The pattern (Edge–Edge interface) is controlled by morphological parameters that manage the street network regarding the binary element: plots and blocks. The level of superposition between the two domains is evaluated by various indicators based on the specifications of the street pattern. According to Al-Saaidy [1] ‘the assets of Baghdad today belong to this historical period of the city with its significant monuments and organic street pattern. Otherwise, the urban areas that settled outside the historical zone were designed according to a modern scheme and a modernist ideology’ ([1], p. 6). Moreover, Marshall [2] confirms that ‘land use zones and roads, in a modernist urban structure, [are] represented separately as nodes and links, but in a traditional urban street network, the streets themselves are significant spatial entities’ ([2], p. 112). The mechanism in operating the street edge differs when it comes to comparison between two patterns: traditional and the modern network. The convergence between the individuals and their adjacent edges, which mostly relates to the street life and social interactions. The pattern
(Edge–Edge interface) is also responsible for defining the boundary between two realms, private and public. The degree of overlap between the two territories is measured by different indices based on the characteristics of the street edge, such as porosity, transparency and permeability (Figure 1).

Using a fine-scale analysis by examining the street pattern seems to be a more effective means of understanding the urban characteristics of streets over large-scale classifications. There is a definite pattern of activity about the order process of compound parameters, which increases in an area or within set spatial dimensions. Conversely, large-scale order is influenced by minimum or single settings, and this due to the comprehensive analysis system of streets, which are expected to be unrelated in formulating distinguishing urban characteristics for the city [1, 3–5]. Morphologically, the leading characteristics of Baghdad Street pattern combine variety and difference between the pristine and new model. Both patterns, historical and modern, are managed by two distinct generative orders: spontaneous (bottom-up approach) and pre-planned (top-down procedure) [1].

Recently, the debate is not only between conventional and modern concepts in urban studies but also what can be understood between two domains: private and public in formulating street edge [6]. Micro-level explanations are essential in evaluating the adjacent edges of a street. The notion of a symbiotic relationship between private and public spaces, with the effectiveness of street life, plays an essential role in advancing the quality of social interaction. In this article, knowing the affiliation of the spatial attributes at a micro and macro scale needs an interpretation of how spatial ingredients in an urban environment are placed. There could be a range of expectations when the community uses the private and public realms. These two domains express individual action and group behaviour. The shared beliefs, norms, values, economics, politics and the natural and built environment, these considerations are the predominant aspects of living in a particular community [7, 8].

Figure 1.
The fictive image illustrates the interface between two opposite street edges. Source: Drawn by the author.
2. Responding to the urban edge

The manner in which a community, particularly in Iraq, manages public spaces could lead to a spectrum of opportunities that inform individual action and collective behaviour alike. Primarily, human behaviour tends to conform to the predominant dimensions of living in a particular community, for example, by embracing the common beliefs, norms, values, economics, politics and the natural/built environment. In this regard, Bianca [9] states that the physical environment represents, ‘… every genuine cultural tradition, architecture and urban form’ and that this ‘… can be seen as a natural expression of prevailing spiritual values and beliefs .... it is an outcome of tradition and daily practices which correspond to certain spiritual principles’ ([9], p. 22). These factors embed the interrelationship between space, time and culture. Moreover, the tripartite connections among these three social parameters (sociocultural, sociophysical and socioeconomic) are rooted in and formulate both the ecological pattern and different responses to the surrounding environment (Figure 2).

Even though there are different urban patterns, people who perceived the public spaces shared the same cultural patterns but not the same behavioural actions. The observation is based on the ethnographic method and quantifies the responses of people who use the street. This technique facilitated the documentation of people’s responses and interactions without any interference or effect on the subjects’ actions. In this regard, to a large extent, the historical and traditional area in Baghdad grants an opportunity for persons to share the public space and involve in such activities as walking, staying, sitting, standing, watching and chatting where the street edge works to interconnect the accommodation of such activities [10, 11].

In the contemporary neighbourhoods, the lost knowledge of public and semi-public or semi-private spaces can be experienced in various ways. Moreover, in modern areas, the human scale, enclosure and definition, and the authority of its public space are missing (Figure 3). As the public space can be distinguished according to the activity pattern of the adjacent context, it is possible to recognise different types of more common street edges, such as residential, commercial and mixed (Figure 4).
These edges are entirely responsible for shaping people’s responses, particularly within residential areas where people react spontaneously to the private, semi-private and even semi-public realms (Figure 4). Inhabitants in these areas tend to change the characteristics of the semi-public and sometimes public spaces. These changes manifest differently, such as through soft treatments or hard borders when a resident illegally occupies the adjacent realm (Figure 5). However, the residential edges are likely to be used by their inhabitants even if these edges face the public space or link directly to the street. Moreover, some proprietors cut off the adjacent part of the street in order to change the primary land use from residential to commercial. Unfortunately, this transformation of purpose, and any misunderstanding of the rights to do so, leads to uncharted changes in land use. Hence, the residential edge is then be used for walking through rather than as a place to stop. According to Alexander [12] and Hillier et al. [13], a street is generally designed for staying in, or movement-to rather than movement-through.

On the commercial and mixed edges, lively interactions between the people and street spaces are experienced. Although these edges, particularly in the historical area, are still lacking in maintenance, they represent an attractive spine for the neighbourhood (Figure 6). People who benefit from this type of edge show different responses based on the particular activity of each unit along with the adjacent edge. Those who use public space can be classified according to their two primary activities: walkers and stayers. The aims of these two classes are varied in terms
of their exchange purpose and/or movement-to/movement-through [6, 14]. The expression of public space and its investments differ considerably between the traditional area and the more modern design. Whether in the traditional or modern area, the quantity of the public spaces is generally required, except in the areas offered by the adjoining edges.

Therefore, there is a need to not only examine the traditional part of a city as an isolated pattern but also to understand the comparison with other, new neighbourhoods in terms of the different perspectives afforded, particularly via the urban form and urban life. The traditional urban fabric arose in response to indigenous cultures and traditions; thus, Remali [15] explains that the ‘traditional urban form is the result of [the] “selectionism” of an evolutionary process, whereby a built environment gradually become[s] congruent with activity systems, lifestyles, meaning and values by applying rules, which are often unwritten, as in most cultural landscapes’ ([15], p. 57). Moreover, there is also a need for individuals to understand their rights when using the street space and the extent to which they (the owner/user) have the authority to alter the public space. Commonly, individuals tend to extend their territoriality, even in temporary activities. This includes peddlers and the owners of adjacent units (shops) who tend to extend the commercial edge by elongating the boundary of their activities. These expansions differ entirely from one individual to another, and from one street to another. One of the main reasons for such territorial extensions is to attract customers by making the adjacent spaces particularly enticing; nevertheless, a critical issue remains concerning the authority for these expansions.
3. Edge: Edge Interface

3.1 Interfacing between street and private-public edges

The main question is 'to what extent individualistic lifestyles can interfere with street life and vice versa' ([16], p. 2). The relationship between private and public would exist within a micro-spatial configuration. Van Nes and López [16] state that the main street network in the urban context is a factor that influences the microscale spatial variables. Spaces that mediate between buildings and streets create social interactions, which help to form human behaviour. These spaces could be part of a buildings’ interior that causally link with the public space, such as courtyards and balconies or through spaces in front of buildings, such as sidewalks. They encourage a social encounter and promote street life at different levels, whether in terms of culture, norms and religion or the physical conditions of the built environment [17, 18] (Figure 7). According to Jacobs ([19], p. 59), a relationship between the private and public realms requires 'a good city street neighbourhood [that] achieves a marvel of balance between its people’s determination to have essential privacy and their simultaneous wishes for differing degree of contact, enjoyment or help from the people around'. According to Marshall [20], the relationship between private and public is neither only determined through physical expression, nor a volumetric enclosure that regulates the public-private border, but rather functions as a social filter.

Marshall ([22], p. 13) states that 'the movement space constituted by streets forms the essential connective tissue of urban public space – from the micro scale...
of circulation within building to the macro scale of whole cities. Therefore, ‘street space forms the basic core of all urban public space – and by extension, all public space – forming a continuous network or continuum by which everything is linked to everything else. This continuum is punctured by plots of private land. The plots of private land surrounded by public streets are like an archipelago of islands set in a sea of public space’ ([2], p. 13). Thwaites et al. [21] address different aspects of urban spaces as a betweenness milieu, which mediates between private and public. Also, they sought to highlight the role of the community in making the urban decisions in order to draw at least the local scale or micro scale of their neighbourhoods. This contribution has been defined as the Transitional Edge.

According to Thwaites et al. ([21], p. 85), ‘a public to private gradient that works in a continuum from private to public and vice versa... [it is] a smooth and complex gradient of subtle changes where a greater range of spaces allows greater diversity of intimacy and social interaction’. Jacobs identifies three main qualities required to successfully encourage people into the street: (1) the situation requires visible demarcation between private and public areas; (2) a particular level of surveillance regarding eyes upon the street and (3) users who exploit the street reasonably, continuously and as effective eyes, in turn, induce others in adjacent buildings into the street to watch not the sidewalk but the pedestrians [19].

Marshall [20] states that there are several subtle complications when understanding privacy; it is not only a single modest linear movement between public and private. Private (exclusive space) means operating the action, giving control of space to reserve a specific area for specific individuals or even a group, contributes to raising the overall supervision and shapes the pattern of difference between public and private. The public (inclusive space) infers to an area where people are able to move, meet, mix and interact [20] (Figure 8).

3.1.1 Street edge characteristics

The street is the artery of a city regardless of its classification; for example, the street form (straight, irregular or zigzag), street function (residential, commercial, mixed-use), street dimensions (its length and width), street class (main, secondary, connected street) and street type (open-ended, cul-de-sacs). One of the main aims of the street network is to enable people to access and move to/through the street network towards their destinations. The street is much more than an urban spatial element; it has a crucial space that is to manage the entire movement and people influx. Besides, the street can be ‘regarded as a fundamental building- block of urban structure, where, the public street system forms the principal part of the urban transport system’ ([2] a, p. 14–15). Hillier [22] states that good spaces are utilised spaces; in this respect, an urban area is utilised by the movement to and/or the through movement. Furthermore, the street proffers routes from everywhere to everywhere else, and its influence on movement is a fundamental source of the multifunctionality that promotes vitality in the city.

Marshall ([2], p. 15) states that ‘the challenge is to address the street as an urban place as well as a movement channel, and how to make this connection of the street work – not just as an isolated architectural set piece, but as a contribution to wider urban structure – otherwise, streets are for people.’ Thwaites et al. [21] refer to ten themes that characterise the street edge and provide valuable insight into the socio-spatial properties relevant to transitional edges. The ten themes are: ‘social activity, social interaction, public-private gradient, hide and reveal, spatial expansion, enclosure, permeability, transparency, territoriality and looseness’ ([21], p. 78–79). Hillier et al. [13] denote that the integration of core maps covers the main streets and shopping areas.

Shopping streets tend to become viable when they have a high level of retail that is integrated with the global network and local pedestrian movement. Less
integration tends to occur in monofunctional areas, such as residential areas [13, 23]. The proportional place of the street and its integration within the entire network system play a crucial role in shaping the street edge characteristics. The configurational properties of the urban fabric are the primary influence on shaping two types of movement; through-movement and to-movement [13] (Figure 9). Movement and multiplier effects are significant prerequisites to promote the quality of street life. The multiplier effect attracts new development, new buildings and uses [22, 24].

**Transitional edge** is defined by Thwaites et al. [21] as the street edge and its multiple functions. It combines three dimensions: social, participatory and structural components. The Transitional edge encourages and diversifies the territorial experience to keep the community sustainably for those who use urban space efficiently. Therefore, this can be regarded as a spatial and sociological line. Transitional edges are coherent socio-spatial domains and not simply boundaries between the architecture and the external public realm .... offer the potential to achieve a more socially optimal balance of form, place and understanding [therefore] transitional

![Figure 8. Street syntax: (a) all strategic roads connect to form a single network; (b) all private spaces connect to the single public space; (c) all buildings have an interface with the single outside space; (d) all buildings connect to the single ground surface. Source: Marshall [20].](image)
edges as key components in the socio-spatial order of the urban habitat’ ([21], p. 23, 53, 71). Furthermore, Thwaites et al. [21] refer to another idiom of the street edge: the broken and unbroken edge that governs the degree of social interaction. It also conveys an impression of the extent to which people can interact with whatever broken or/and unbroken edges (Figure 10).

According to Jacobs ([19], p. 380) Visual Street Interruption (VSI) is when, ‘a good many city streets (not all) need visual interruptions, cutting off the indefinite distant view and at the same time, visually heightening and celebrating intense street use by giving it a hint of enclosure and entity’. VSI encompasses a set of considerations when ‘there is no visual tale of street intensity and detail to tell … and should be in functional terms, not dead ends but corners’ therefore, ‘visual street interruption is a natural eye-catcher, and its own character has much to do with the impressions made by the entire scene’ ([19], p. 382–383). The street edge should be characterised by catching the eye and giving the space a rooted sense of place Buchanan [25]. According to Segall...
As the activities grow around the space, it becomes more lively. Source: Alexander [12].

([26], p. 51, 73), ‘the visual experiences most generally available in a particular environment predispose one to identify most readily material similar to the content of those experiences ... the pattern of visual experiences in the lifetime of a person can modify his perceptions of objects in space’ (Figure 11). Understanding the concept of Visual Street Interruption and its role in Baghdad could be a critical issue. Meaning that there is a delicate line between Visual Street Interruption and urban chaos in reading the street edge, the second phenomenon one could recognise in some urban areas of Baghdad city.

3.1.2 Private edge characteristics

Alexander [12] offers 253 patterns that are divided into 36 categories. One of these patterns is path shape, which is a crucial component in the built environment and contributes to other patterns in drawing the whole context of a city. Alexander ([12], p. 590) advocates that the ‘street should be for staying in, and not just for moving through, the way they are today’. Alexander ([12], p. 593) opposes the concept of setbacks, stating that ‘buildings’ setbacks from the street, originally invented to protect the public welfare by giving every building light and air, have actually helped to destroy the street as a social space ... the setbacks do nothing valuable and almost always destroy the value of the open areas between the buildings’ (Figures 12 and 13).

Marshall ([20], p. 105-112) states that the ‘... private plots and buildings... [where]... buildings and cities are different kinds of social container, reflecting their

Figure 12.
As the activities grow around the space, it becomes more lively. Source: Alexander [12].
The Street Edge: Micro-Morphological Analysis of the Street Characteristics of Baghdad, Iraq
DOI: http://dx.doi.org/10.5772/intechopen.102403

The expression of privacy ranges from soft control, like colour, texture and level, to hard control, such as fence and/or wall.

Furthermore, moveable and invariable can also classify the nature of privacy. Kostof [29] refers to the authority of using private space within the space of the street. He states that the buildings’ edges need not be completely subjected to owners’ desires, as there are public authority regulations that organise the street edge in such a way to increase the variety of building façades from block to block. The diversity works to impart the beauty of the block and street edge to the city; it incites attraction and surprise in people, whether inhabitants or visitors.

The Filter Edge is defined by Marshall [20] as a social filter when he states that the city is heterogeneous and involves different kinds of people who move through the social filter system. The systematic circulation of people ranges from loose filters, like streets, to reach fine filters, such as building edges. Therefore, he states that ‘a building is an environmental container and filter; the building-plot-street system is both a social container and a social filter... the importance of public streets as being not void, but as integral to the notion of a city, a kind of mortar binding between social units. Without this system of public spaces, a city would not be a city’ ([20], p. 105, 112). Canter ([30], p. 9) argues that ‘the environment providing perceptual stimuli [and] also be thought of as a filter ... we are always in the environment to carry out certain activities, and we usually carry out these activities with other individuals ... this is the fact that we actively modify, build and influence our physical surroundings’.

3.1.3 Public edge characteristics

The sense of public space is one of the main concerns and dialogue in generating social interaction and improvements in street life. The public edge embeds a broad
spectrum of events, activities and social assemblage. It is a place where people should feel free to express their aspirations and desires. It ‘host[s] structured or communal activities—festivals, riots, celebrations, public executions—and because of that, such places will bear the designed evidence of our shared record of accomplishment and our ritual behavior’ ([29], p. 124). Accordingly, ‘the main public places of a city are its most vital organs [thereby] if a city’s streets look interesting, the city looks interesting; if they look dull, the city looks dull’ ([19], p. 29). Banerjee ([31], p. 14) suggests that ‘the sense of loss associated with the perceived decline of public space assumes that effective public life is linked to a viable public realm. This is because the concept of public life is inseparable from the idea of a public sphere’.

The public edge forms the third domain for social interaction, and investment in the function of the street edge encourages people to collect. The variety in the function of the public edge promotes street life and maximises social interaction [32]. It is necessary for the humanisation of public urban space such that the activities taking place contribute to the continuous surveillance of the space [33]. Oldenburg [34] adopts ‘Third Place’ as an expression of other places, apart from settled places and workplaces. The third place should conjoin people in a free and mixed way by presenting exceptional comfort which is important to public life. The third place is a sorting edge that filters interests, and that people admire or ‘un-admire’ when using such places.

The highest value of the third place lies in its potential to encourage the meeting of people from diverse classes, age groups and with varied interests. It is important for the third place to be accessible, easy to reach and comfortable both for regular frequenters and newcomers. Furthermore, unplanned, unscheduled, unorganised and unstructured are four characteristics of the third place, which define it as essential, universal and pivotal to informal participation and social interaction [34].

Hall [35] refers to two types of spaces; Sociofugal is a space that keeps people apart, and Sociopetal is a space that brings people together. Engwicht [14] states that ‘a vibrant spontaneous public realm, therefore, allows greater flexibility in our private relationship’ ([14], p. 27). However, motorised regulations and their requirements exploit the public realm and drive away from the realm of the spontaneous encounter, which forces people into what Sennett [36] called the ‘polarization of intimacy’. Jacobs [19] states that the spatial social theme within the public space should be employed to capture what she called self-appointed public characters.

Figure 14.
Demonstrating the ability of different types of urban space to shape three street edges. Source: Drawn by the author.
A public character is a person who frequently maintains contact with those who also use the same edge. Prosperous public places, according to Carmona et al. [27], are characterised by the frequent attendance of people in self-reinforcing ways. The public space is an optional and available environment, that people can choose whether to visit. Hillier [22] states that the street as a space for movement shapes the primary activity for those who prefer to stay or go.

Self-control can characterise public edge even though space is designed for public benefit. At the same time, it characterises private control by those who regularly use it. Zukin [37] suggests that there is not only social diversity but also the diversity of buildings and that helps to give a city its ‘soul’. He mentions that, “the paradox of public space is that private control can make it more attractive, most of time, to a broader public, but state control can make it more repressive, more narrowly ideological, and not representative at all” ([37], p. 158). Moreover, Jacobs [19] defined the ‘eyes upon the street’ where these eyes belong to people who contribute to shaping the property of the street [38–43] (Figures 14 and 15).

4. Three edges’ characteristics in referring to Baghdad City

According to Hillier [22], in Arabic cities, diversity can be found in the development of the same underlying law. This tends to enable well-defined relationships between different levels of movement in the urban context. The old urban fabric seems quite complex in its street network, particularly within traditional Arabic cities; however, three domains play a crucial role in formulating the character of the street edge in such cities, namely street, private and public. Islamic cities are associated with what is called pre-Islamic regions, which inevitably have their own entities and identity regarding urban patterns, building typologies and construction techniques, besides, the natural and physical environment [44]. The ancient Mesopotamian model of clustered courtyard buildings, which date back to the 2500 B.C., provide evidence of the traditional settlement areas in other surrounding regions. Ur city is an ancient...
town situated to the south of Mesopotamia where its construction pattern matches the Islamic traditional cities that emerged later (Figure 16) [44, 45].

**Urf** is a systematic generative process (relating to the concept of habit or custom in English). It is a hidden order grounded in the consciousness of a community without the need to be listed, where every single member of the society is aware of what **Urf** is. Its principles and influences formed a pattern within traditional Arab and Islamic cities over time. **Urf** is initially based on human behaviours and the acceptance and satisfaction of these among a community, which generates these behaviours; these are compatible and match with Islamic rules. Otherwise, such individuals are rejected by society. Repeating the action means it becomes a habit, “for every act there must be an impetus or reason... therefore every **Urf** is a habit, but not every habit is **Urf**” ([47], p. 110). **Urf** has become a source of legislation: it is flexible, changeable and dynamic in simulating the reality of life and its conditions. Recently, the term **Urf** could be pretty limited in serving and formulating public and private space use criteria. Unfortunately, this phenomenon is quite evident in a significant number of neighbourhoods of Baghdad. This paper tends to highlight the idea of **Urf**, apart from going deeply in explaining this concept in terms of implication.

Three factors, identified by Hakim [44], affected the nature of Islamic traditional settlements regarding their building patterns and planning. These are: (1) Pre-Islamic urban models and their people, culture and civilisations in territories that converted to Islam, where the norms and customs have continued their influences on the Islamic culture hitherto. (2) A transport pattern was made by the two-primitive means (camel and horse), which affected the street network patterns and the urban fabric of traditional cities between the fourth and sixth centuries A.D. (3) The surrounding natural environment embraced most Islamic regions located between latitudes 10 and 40. Thus, the microclimate was shared with the same analogical conditions.

The emergence of the Arabic/Islamic city was based on three processes. Firstly, it renewed an existing city founded in old colonial areas to meet the prerequisite for a social life among those people at that time. Secondly, they were pre-planned or planned cities, which were designed and pre-planned in accordance with Islamic rules and authorities. Historical resources and archaeologists confirm that the first primary planned city in the Islamic era was the round city of Baghdad, which was...
situated to the east of the Islamic region [48, 49] (Figure 17). Thirdly, as a spontaneous model, it can be identified as ‘the most enduring and pervasive, and today most of the older areas of capitals and major towns in Muslim world evolved out of this model’ ([44], p. 88).

However, Hakim ([50], p. 84) states that ‘an important observation is that when colonialism ended, it left a gap between past and present and also left technology which did not evolve out of the past and has affected architecture considerably and in many ways, colonialism turned into cultural and technological dependency’. Consequently, serious negligence occurred with the introduction of new regulations for city planning. These new demands considerably affected the whole system of the old urban fabric; it was designed on a human scale and their needs aside from the large-scale urban spaces.

4.1 Street Edge’s characteristics

The three street space components (street, private and public) integrate with the other components to provide one entity. The essential urban components that constitute the main character of the old urban fabric are the clustered courtyard buildings, street networks and the hanging elements. Two predominant types of street networks are embedded within the old urban fabric. The first is the open-ended street, through which pedestrians publicly flow, and the second one the cul-de-sac, which is governed by inhabitants, is a private zone, and thus not normally permissible for other people to enter or to use this type of street [40, 50, 51] (Figure 18).

The old part of Baghdad is characterised by a maze of narrow streets continued, designed to meet the needs of pedestrians (Figure 19). The traditional pattern forms a more preferable sense of community, which appears serene and shadowed for the most significant part of Zugag during the day. Adjacent houses, Zugag, are varied in width; in some cases, these are no more than 3 m. While at the top, because of the Shanashil (prominent windows as a hanging or high-level protrusion) the street was almost covered over. The main Zugags in the residential quarters of the old part of Baghdad are usually found on mosques and bazaars. This feature can also be observed in Arab cities [51–53] (Figure 19).

The hanging element is a ‘high-level protrusion’ that can easily be seen during peregrination throughout the old urban fabric; the component was constructed above the street. This element has a unique name in the traditional area of Baghdad city ‘Shanskul (the plural is Shanashil)’ is an oriel window. It is an upper-floor projection of a courtyard house, varied in size and shape in terms of ornamentation and decoration, and juxtaposed against the mass and shadow of the adjacent street [53, 54].
street denotes 'bridging the street, and the buttressing arches spanning between walls on either side of the street to provide structural strength and support' ([44], p. 89).

In traditional Islamic cities, a street refers to the central market. The street market on both sides is several repetitive small chambers that are opposite to each other and separated by about 10–20 feet. To enable pedestrian flow, the street is mostly covered by vaults that include skylights, which allow sunlight to pass through and
protect the customers from undesirable climate conditions. Mostly, each street
market is connected by the organic network of the narrow lanes or by other street
markets. The other public facilities, such as mosques, baths, hotels or Khans are
located close to shopping streets and thus, as an access network are maximally
utilised ([44], p. 101, [55]). The traditional Aswaq (markets) are still alive in the old
part of Baghdad, where each Suq is delegated for specific products and purposes,
such as the Textile Suq, Book Suq, Copper Suq. The specialisation of functional uses
is one of the leading characteristics in the old traditional markets, which are placed
close to each other in a harmonic way (Figure 20).

4.2 Private edge characteristics

In Islamic cities, privacy is a central factor in determining the use of space;
this includes direct visuals, particularly in residential areas. The cooperation
between people and other institutions in formulating a generative system worked

Figure 20.
Safaeer Suq (market) is one of the oldest traditional market where copper plaques and plates are attached to
the shops. This Suq was delegated for copper works, but has since been occupied by the textile merchants, thus
minimising the number of artisans who work with the copper products. Source: Photographed by author’s team,
04/December/2016.

Figure 21.
Two Iraqi traditional courtyard house that illustrates the dogleg (broken) entrance that links the courtyard of
the house and the street as a public space. Source: Reuther [58]. All right reserved for Al Warrak Publishing
Ltd., London, UK.
to maintain the rhythm and hierarchy between the private and public domains [56, 57]. Furthermore, the Muslim community tends to be more concerned with preserving privacy, not only from physical connections but also in terms of visual contact. The privacy factor significantly affects the morphology of the urban form in Islamic/Arabic cities and gives a distinct shape to the city. For example, the external street edge contains the main dogleg entrance that leads to the courtyard house [58] (Figure 21). The dogleg technique gives a high level of privacy for inhabitants where there is no direct access to the private space from the public realm. Despite the fact that entrances are on opposite sides and directly adjacent to the street, no entry directly faces another.

In the residential area of the old part of Baghdad, the lower level of the external wall that is adjacent to the street is almost blind and as solid as a windowless wall to the outside. To attract lighting and ventilation in the courtyard house, all rooms are oriented inwards to the courtyard. Therefore, the external façade lacks apertures except, occasionally, small niches beside the upper level that are designed with Shanashil. The Zugag exhibits simple façades with a minimum of details at the lower level; instead, rich detail and decoration is placed on the Shanashil and main entrance (Figure 22) [55].

Moreover, to avoid straight visual connections, people in traditional cities tend to adopt the overlooking technique in setting doors, windows, openings and heights, where ‘in Islamic culture, protection from visual intrusion into the private realm of houses was the paramount consideration. Views were appreciated when available, but they took second place to the blocking of visual corridors into the private realm’ ([59], p. 29). It allows for inhabitants to observe outdoor activities and pedestrian movement, but those who use the street were not able to see inside properties. This technique used the concept of Shanshul/Shanashil as the external element of the Zugag (local streets within traditional neighbourhoods) in the traditional area of Baghdad.
Shanashil were made up of smaller, modular, sash-window units; they are attractive architectural elements employed to promote the external edge of the Zugug (street). Shanshul includes wooden sliding windows and produces extra shadow for pedestrians against the direct sunlight, particularly in the summer season. Furthermore, the Shanshul technique traditionally plays a significant role in social interactions and allows inhabitants to conduct conversations through opposing rooms on the upper floor (Figure 23) [54].

The concept of bridging the street also has been observed in the traditional area of Baghdad but did not spread widely, like Shanashil. Technically, this type of high-level protrusion belongs to one owner or exploits links between two properties that belong to the same inhabitant (Figure 24). In the non-residential property, they are employed for public use and have the same characteristics. Traditional shape complements the street pattern and the socio-physical structure of Baghdad, for instance, mosques and hammams. These types of buildings are oriented entirely towards the internal courtyard.

A street provides a distinction between the private and public space in the traditional area of Baghdad; it is very controlled and restricted regarding the degree of permeability, transparency, accessibility and connectivity. The street is almost
Figure 24. The concept of bridging the street in the traditional area of Baghdad, but it does not spread commonly like Shanashil. Source: Reuther [58]. All right reserved for Al Warrak Publishing Ltd., London, UK.

solid on the ground floor and semi-closed or closed by Shanashil on the first floor. The house entrance and Shanashil form the only two channels to link between the private streets. In the modern context of Baghdad, within the residential area, the private edge varies from direct adjacency with the street to set backwards. The differences in street pattern, plot layout and block size, and the location of the building within the plot area play a key role in formulating the spatial organisation and provide distinct characteristics for each area of Baghdad (Figure 25).

The characteristic of the private edge in the modern pattern of the street network has different criteria and considerations. This leads to different interpretations of the private edge and the extent to which inhabitants have the authority to claim the juxtaposing space located in front of their property. It also influences the boundary of the street width, and to what extent it is for public use. The absence of a clear definition for the private, public and street edges, particularly in commercial streets which broke through the traditional area, has resulted in complicated situations and difficulties in how to manage this critical area of Baghdad (Figure 26).

4.3 Public edge characteristics

The public edge formulates the vitality of the street, where it enables people to interact either with the street edge or with other people. Tolerance depends on different criteria and rules, besides the norms of society (values and Urf). In the traditional area, the norms and Urf can be realised as concealed orders indoctrinated in the consciousness of society without the need for documentation. People realise the system of norms and Urf and then accordingly, shape their behaviour. The concept of Urf is related to the traditional area of Arabic/Islamic cities, where these types of areas were normally based on a set of treaties accepted by people.

The idea of Al-Fina can be addressed as one of the public edge’s characteristics in the old traditional part of Arabic/Islamic cities, such as Baghdad. Al-Fina is a spatial element that distinguishes the street edge and interior courtyard of a house.
It is located immediately adjacent to the peripheral exterior wall, opposite the street space. It serves daily and temporary uses without a need to own the space [60]. Moreover, the combination of zigzag and a string of narrow and wider areas along one street provides visible evidence of the design of a traditional city in the Islamic/Arabic world (Figures 27 and 28).
**Urban Agglomeration**

Figure 27.
\[\text{al-Fina} \text{ is one of the leading characteristics of traditional Arab/Islamic cities. It refers to different purposes which both private and public domains can benefit from, but it is never be owned by anyone. Source: Hakim [60].}\]

**Figure 28.**
\[A \text{ street in the traditional part of Baghdad, Al-Karkh. Note the steps of the houses on the left of the picture, and verandahs on the upper level; both are located within the Al-Fina domain, besides having other hanging features. Even the car stop is subject to the same concept, despite the limitations of public edge. Source: Photographed by author's team, 05/December/2016.}\]

\[
\text{Al-fina is completely changed in the modern neighbourhoods, where the built-up area is placed with the frontage set back. However, the area adjacent to the front wall of their properties is still used by people for different purposes, meaning that the authority of Al-Fina has been adopted differently. It might be recognised as a type of soft territorial space, 'if territories are relatively small (garden or house versus park or apartment building, for example), and if they can be modified or maintained with modest effort, then it is easier for individuals or small groups to achieve control' ([46], p. 213) (Figure 29).}\]

Furthermore, the concept of the 'in-between’ space is used by Nooraddin [18] to denote a transitional milieu that mediates between the street and private space often in Arabic/Islamic traditional cities. In fact, there are no hard barriers between the in-between space and the street. The in-between space is generated by the consumer of street space, ‘In between phenomena, how it was organised
in the old Islamic cities and how it contributed to the character of their street environments’ ([18], p. 66). The in-between space is mainly located in the front of the private area where it is used as a gathering space and for different activities. This type of space has loose meaning that there is no specific shape to give it a final form. Instead, it is flexible in both investment and appearance. It enables people
to meet their needs and desires as much as possible regarding comfortable climate, religion, lifestyle, community and cultural aspects. Two types of in-between space are defined as: (1) related to the commercial street, and (2) located on the residential street (Figures 30 and 31) [18].

According to Hall [35], the in-between space shapes the microcultural theme, where it attracts the people to share the same territorial area. This notion, to a large extent, is rooted in the old part of cities. Hall [35] distinguishes three types of proximate behaviours that manifest in a space – Infracultural: behaviour rooted in the human biological past, Precultural: the physiological level in the present, Microcultural: based on which most proxemic observations achieve. The Microcultural pattern encompasses three aspects (buildings, space and the distances maintained in encounters with others) which define territorial patterns, ‘... in every sense of the word an extension of the organism, which is marked by visual, vocal, and olfactory signs. Man has created material extensions of territoriality as well as visible and invisible territorial markers ([35], p. 103).

Can and Heath [17] use the term In-between to study social interaction and the morphological form of a city. They examine spatial configurations that occur in different street patterns: traditionally and modern. In traditional Islamic and Arabic cities, the In-between space reflects a social interaction between neighbours where it offers a niche within the street edge and in turn, improves the street life. The pockets of activity play a significant role in shaping a live space; it mediates activities and the path as an in-between area in order to create an attractive space for people to pause and get involved [12].

Kostof [29] states that public spaces are defined by residual, interstitial spaces located between neighbourhoods’ cells, such as bazaars or Aswaq and Maidans (public squares). The contrast with Western urbanism lies in the fact that it pays more attention to the street system and public spaces. The urbanism process in traditional Arabic/Islamic cities is based on the inside to outside, and is understood as a bottom-up approach, or, in other words, from private tendencies to public propensities. In Arabic/Islamic cities, the sense of public space is defined in soft boundaries rather than hard borders, where the users and visitors share the same norms and values by investing in the public spaces. Kostof ([29], p. 127) states that ‘regardless of the private use of these resources, they could never be privately owned. Every member of society had equal claim to public places, be Muslim or
non-Muslim. Whoever comes earliest to a public place has the right to make use of it through that day. The Suq (the Arabic plural is Aswaq), in traditional areas of Baghdad, derives from the organic street pattern as there is no dramatic change between the Suq space and other networks, but rather movement is spontaneous and streamlined. The transformation is not based on the morphology of the space and its distinct characteristics, but also on the functional pattern of the street. This, in turn, results in a new vista with each movement (Figure 32).

A Suq is a crucial morphological urban element that is spontaneously subjected to the hierarchy of location. Aswaq were organised in different ways, whilst the linear Suq functions as a continuum spatial route, where both its sides have opposite shops. As an area, the Suq denotes a series of back-to-back rows that are situated to face each other, whilst the units of a Suq are located against the perimeter of buildings [61, 62] (Figure 33). The pattern of a Suq and its spatial configuration came to exist as an assortment of different types of Aswaq (Arabic plural). It had various functions in order to serve a significantly sized community within the same scope, where Aswaq were located to be proximate and adjacent to each other. The proximate pattern of
distribution of Aswaq provides a distinct morphological form in the traditional area of Baghdad. The proximity enables people to combine shopping and viewing the sights (Figure 34).

Functional proximity is often one of the important criteria for the closeness of the Aswaq, for example, Al-Mutanabbi street is designated for bookshops, publishing and stationery storage; moreover, it is close to Al-Sarai Suq to provide stationery and books (Figure 34). Along with the value of proximity, the pattern of the street in this part is more complicated and based on the organic network, which developed spontaneously. The proximity governs the location of the Aswaq and the other social facilities, such as the Masjid (mosques), Gahwah (café), Hammam (public bath) and Sahah (squares), where people are able to access different activities. This sense of proximity, to a large extent, is lost in some modern neighbourhoods in Baghdad, with their new street patterns that were established according to car-based movements. This resulted in minimal social interaction, and it maximised the distance between settled units and the Aswaq, besides other facilities and services (Figures 32 and 34) [63, 64].

Proximity, in this regard, is based on human demands, regarding accessibility and connectivity. This considers 'where' as the settled units in which people live,
The Street Edge: Micro-Morphological Analysis of the Street Characteristics of Baghdad, Iraq

DOI: http://dx.doi.org/10.5772/intechopen.102403

and ‘there’ where their needs are located. The traditional part of Baghdad, like other Arabic/Islamic cities, emerged initially from a bottom-up strategy, where the community had the authority to shape and reshape the built environment so that it harmonised with their needs [56, 65]. In the traditional area of Baghdad, Al-Asrab [53] refers to another morphological element that characterises the urban context of the street pattern in this area, namely, Al-Sahah (Sahaht – as plural). It emerged spontaneously within the urban fabric and is normally placed where two or more streets come together to form a connective space. This space has been used as a meeting place for neighbours. Sahah within Mahallahs (neighbourhoods) were full of life and attractive as social interaction spots that eventually spread through the traditional urban fabric [53].

Sahah space refers to several Sahaht that are varied regarding the size; it ranged from the more private space, such as the courtyards of traditional houses, tertiary Sahaht, and more public areas like sub-Mahallah or secondary Sahah and the primary Sahah. The hierarchy of accessibility from small to the large Sahah was perceived both by those who lived there as well as visitors (Figure 35) [53]. In a new urban context, where the squares (Sahaht) develop from a planned process, open spaces are meaningless and void from any common function. They, however, enable the unnecessary physical expansion of the city, and the sense of human scale is lost as their geometrical dimensions are not subjected to other surrounding urban elements; thus, the enclosure is also missing. In the modern pattern, squares fall out of the authority of inhabitants, as there is no explicit declaration about the claim for this type of area. Moreover, there is a deficiency in determining the nature of use, even though they are designed for public use (Figure 35).

5. Conclusion

Defining the street edge was the primary aim of this paper in order to highlight the different interpretations and meanings of the three fundamental elements that function together to formulate the street. These elements are the street, the private edge and the public edge. The transformation in the urban structure from the
traditional pattern to the modern model not only changes the morphological dimension but also influenced the relationship between the private and public realm. The manipulation of private and public relations could be the primary condition to figure out the street life and how people interact with each other. Hence, different variables could be employed to measure the relationship between the private realm and the street space at a micro-level. These factors are experienced by those who use a street when dealing with the street scope within a specific segment. The permeability, inter-visibility, connectivity and accessibility are different between the traditional area and the modern parts.

The notion of the private-public was examined to investigate the street’s edges. Each realm was addressed in detail by emphasising the basic morphological process based on the edge’s characteristics. The critical interrelationship between two edges: private and public represents the micro-level of a street segment that is used to evaluate the interrelationship and how could affect street life and social interactions along the street edge. Across the traditional pattern and modern model of the neighbourhood, there was a significant disparity between the private and public edge.

People have a set of expectations when they determine their interactions with individual action or collective behaviour in a particular street edge. Classifying the street space into three edges is an essential method in order to understand human behaviour thoroughly and how could people respond to each other and the three edges: street, private and public. Fine-scale is another aspect to address the physical environment at the street scale; also, the micro-level could be one of the strategies to deal with the street parameters in terms of the ability of the different edges in managing human behaviour. Indeed, there is a need to distinguish between two patterns; the first one is based on the bottom-up approach as a spontaneous pattern, and the second is the up-down method as a pre-planned model. Once understand the differentiation of traditional area (spontaneous) and new neighbourhood (pre-planned), it would be there a thoughtful procedure to deal with the private and public edge.

There is a lack of required building legislation and maintenance monitor programs for planning and urban design, including a lack of commitment to restrict initiatives to assure they conform to traditional patterns. Therefore, addressing the central gap means verifying the most critical indicators of the street edge problem, both in traditional and modern patterns, which necessitates the detection of related studies that try to link the urban form with active-ties and human behaviour alike. The traditional region emerged spontaneously apart from the notion of land use or zoning diagram. This characteristic is a crucial point within urban development schemes. The street pattern and paradigm of the buildings in the area are intricate; accordingly, there is a need to develop particular standards and regulations to preserve the identity of old Baghdad and understand the contemporary objectives of the new pattern. In this regard, proffering more further consideration to the centre of Baghdad is required, meaning that the control of this traditional region ought to be studied and systematic to advanced quality of life and to improve urban sustainability.

Terminologically, urban symbiosis could be aligned with sustainability, but this term can cover what is related to human behaviour and street activity. The main aim of symbiosis is to create a high interaction productive relationship between creatures. The notion of symbiosis holds three kinds: Commensalism, Parasitism and Mutualism. To comprehend the fundamental system in the traditional pattern of Baghdad city, understanding the micro-level of activity and fine-scale of the urban fabric is required to form a symbiotic platform. Including the processing of the morphology and the relationship between the plot, block and street network, also the symbiotic relationship between the public and private domains. European experiences in dealing with outdoor activities and how people respond to the street
edge have been highlighted thoroughly by different scholars and significant studies. People effectively experience this urban knowledge and urban life at the micro-level of the street edge in participating in the fine characteristics of such edge. In this respect, Jan Gehl’s school could be one of the more significant experiences in dealing with street life.

Acknowledgements

I would like to express my gratitude for the thoughtful guidance from my supervisor Professor Sergio Porta, from the Urban Design and Director of UDSU at the Urban Design Studies Unit, Department of Architecture, University of Strathclyde, sergio.porta@strath.ac.uk

Author details

Haider Jasim Essa Al-Saaidy
Department of Architectural Engineering, University of Technology, Iraq

*Address all correspondence to: haider.j.essa@uotechnology.edu.iq
References


[18] Nooraddin H. Al-fina’, in-between spaces as an urban design concept: making public and private places along streets in Islamic cities of the Middle East.


[34] Oldenburg R. The Great Good Place: Café, Coffee Shops, Community Centers, Beauty Parlors, General Stores, Bars, Hangouts, and How They Get You Through The Day. New York, USA: Paragon House Publishers; 1989


[38] Hall ET. The Silent Language. New York, USA: Doubleday; 1959

[40] Hillier B, Hanson J. The Social Logic of Space. Cambridge Cambridgeshire; New York: Cambridge University Press; 1984. DOI: 10.1017/cbo9780511597237.004


[52] G.I.S.Department. The Traditional Area of Baghdad based on Polservice, Geokart, Poland, Rectified by Dep. of GIS. Department of Geographic Information System GIS, Mayoralty of Baghdad, ed: The official letter, No.: O.P.U 420, Date: 24/10/2016 issued by University of Technology, Office of the President. 2016

[53] Al-Ashab KH. The Urban Geography of Baghdad. UK: University of Newcastle Upon Tyne; 1974

[54] Fethi I. Urban Conservation in Iraq: The Case for Protecting the Culteral Heritage of Iraq with Special Reference to Baghdad Including a Comprehensive Inventory of its Areas and Buildings of Historic or Architectural Interest. UK: University of Sheffield; 1977


[59] Hakim BS. Mediterranean urban and building codes: origins, content, impact, and lessons. Urban Design
International. 2008a;13:21-40. DOI: 10.1057/udi.2008.4

[60] Hakim BS. Arabic - Islamic Cities: Building and Planning Principles. UK: Marston Gate; 2008b


[62] Oliveira V. Urban Morphology: An Introduction to the Study of the Physical Form of Cities. Cham: Springer International Publishing; 2016. DOI: 10.1007/978-3-319-32083-0

[63] Al-Azzawi SHA. A Descriptive, Analytical and Comparative Study of Traditional Courtyard Houses and Modern Non-Courtyard Houses in Baghdad. UK: University College, University of London; 1984
