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Enabling quality of urban spaces in Cairo's new suburban settlements: a community character approach for New Cairo, Egypt

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Abstract

A global concern claims that activities and functions that once filled traditional public spaces are privatized being less and less oriented to the public. In Cairo's new settlements, public spaces don't seem to contribute to its public life. Each community's most valuable assets are the ones they already have; thus, urbanisms advocate the role of retaining traditional street patterns, vistas, and landscape of a community's distinct character. The research aim is to identify design attributes to be added to the literature in terms of designing public spaces for the specific cultural context of Cairo, Egypt, and its new suburban settlements. The methodology then follows a comparative analysis study to reach the desired objectives of buildings a community character approach. In an exploratory method, two case studies of public spaces in Cairo are chosen following a purposive selection most relevant to the study. The target is to choose two cases in proximity for users to be familiar with the two of them and enable a reliable comparison. It then conducts a survey that involves the user's evaluation of their public spaces in correlation to their needs. Jan Gehl's twelve criteria are adopted by this paper's field investigation for the assessment of public spaces' quality. Findings of the study include an elaboration on Jan Gehl's twelve criteria either by highlighting the importance of existing aspects or the addition of further criteria that showed value to public space quality and their users. The findings provide guidelines that help in designing quality public spaces in Cairo's new settlements. The added value from this study is in identifying a set of factors or attributes that consider users' needs for a given cultural context.

Keywords: Community character, Public places, Cairo's new suburban settlements

Introduction

Each community's most valuable assets are the ones they already have, and thus, urbanisms recognized the role of historic preservation in retaining and enhancing a community's distinct character. The meaning of historic preservation adopted in this paper does not only mean old buildings; it means retaining traditional street patterns, vistas, and landscape [23]. The definition of a community's distinctive character in a particular place is an integration of many factors either the built form or its natural setting

and users [5]. Enhancement of all these factors would help build a unique community's character, establishing a sense of place for its residents. Laying hands on specific factors or attributes of enhancing a community character for a specific place calls the involvement of its users and residents to identify their needs and preferences. The use of community character design attributes is thus advised to develop a city's identity [22].

In addition to preserving the city's historical identity in general, the focus should be on the city's public realm designing quality public spaces in particular [14–32]. Public spaces promote a sense of place with a pleasant environment and quality visual identity [43]. However, there seems to be a global concern that activities and functions that once filled traditional public spaces are privatized being less and less oriented to the public [10–39]. The sole meaning of public spaces is to provide a service in regard to a user's equal rights to the space [10–28], being open to everyone [9, 21–36]. Yet, the need of social groups of people to wall-off themselves began to affect different forms of life including the public realm [2]. A better quality of life in general and security and freedom are usually the motives that drive people especially the elite society into separating themselves in secluded environments [2–13].

Consequently, the private sector got involved in the public realm, where privately owned public spaces have become an essential form of public life [28]. Having a public life based in streets, squares, or parks that used to be a necessity [7, 8] is now migrating into shopping malls and different forms of private or pretended public spaces [6]. Similarly, different forms of public life in Cairo, Egypt, seems to be affected by segregation [1, 2]. Shopping malls started offering exclusive forms of public life, imitating a diverse walkable experience [1–41], thus increasingly luring social groups of people especially middle- and upper-class residents away from street shopping and public spaces [18–34]. There are several reasons that explain this phenomenon. the first is security reasons; the second reason is governments favoring private developments and investments, and the last reason is touristic dominance to historical public spaces rather than the community [42]. Precise measures need to be articulated to restore quality public places for people in Cairo, Egypt's urban space [27].

It seems harder to restoring places in the urban space within existing compact cities [24]; thus, designing quality public spaces in new settlements was hoped to resolve the issue [32–45]. Yet, the fact is the quality of public life in Cairo's new settlement is affected as well by the presence of private or pretended public spaces that attracts its residents [1–38]. The advantage in the case of Cairo, Egypt, is the rich history, architecture, built environment, and natural setting that formulates its identity. Urban spaces, in their old compact districts, seem to encounter spatial diversification, activity layering, and mixed-use services [29–37] as opposed to its new settlement's public spaces. These factors and attributes are needed for the desired quality design of public spaces that promotes a sense of place for their users [23–32]. Accordingly, this paper investigates the potential of building a strong community character that preserves more than the built form, improving the quality of public space that holds meaning and attachment to its users and their needs [5–23].

The study aims to identify design attributes to be added to the literature in terms of designing urban spaces for the specific cultural context of Cairo, Egypt, and its new suburban settlements. Adopting a community character approach in order to reach the desired objectives is done through a comparative analysis of two different cases of

urban spaces in Cairo. The first chosen case would be one of Cairo, Egypt's quality public spaces in its old compact districts. Al Korba and Roxy Streets are urban spaces in the Heliopolis district that were once planned to be a suburban settlement, places that seem to encounter factors or attributes of a community's distinctive character and show meaning to its residents and users [13–30]. The second case represents one of Cairo, Egypt's new suburban settlements where there seem to be concerns with public space quality [1–38]. New Cairo is a well-occupied suburban settlement with Banks Street as its central hub of services and activities acting as a public space. Assessment of both cases built environment, natural setting, and capability of encountering spatial diversification and activity layering to reach the research aim.

Research and investigation on how to design public spaces that the community can relate to and enable a sense of place and attachment to its users is much needed [4]. Further interpretation to this approach could be adopted by researchers to include a wider exploration of quality urban spaces in Cairo, Egypt's old compact district that shows the potential of adding up to the literature on the matter [12]. Additionally, urban designers need to acknowledge Egypt's rich cultural context that is intense with different cultures and subcultures. It is in need of more research to build a strong community character approach suitable for its various cultural context differences [11]. An important attribute in which policy makers ought to be aware of is that relying only on what the international literature has to offer with disregard to a specific cultural context will not end up in quality public places for the community. Thus, the use of community character design attributes would add much value to the role of urban design of urban spaces.

Background of the literature

This paper starts with a review of the literature most relevant to the topic. It first investigates the public realm condition in Cairo, Egypt, in order to lay hands on various issues and concerns with its urban spaces. In order to reach the study aim, it then explores various urban movements that investigates public place design characteristics and their behavioural impact on its community [19], in addition to review of the literature on place making and the livability of urban spaces as plazas, squares, streets, and parks [7–44]. Eventually, the Gehl criterion is deducted in order to assess quality in urban spaces [16] to an appropriate set of factors and attributes for designing quality public places of Cairo's specific cultural context.

Urban spaces condition in Cairo, Egypt's new settlement

Urban growth in and around Cairo has caused the city to expand, planning a large number of new suburban areas along the city fringes [33] that targets a specific group of the community [6–17]. The concern is that this may affect its urban quality and lead to the loss of public life, rather than enable its presence in urban spaces such as public parks or commercial streets [1–38]. Thus, public spaces ought to be retained for a better urban quality of life. It seems harder to restore places in Cairo's condense urban spaces [42]; hence, it is hoped to design quality public places in Cairo's new suburbs settlements [27].

The approach of planning suburban new settlements was intended to focus on the pedestrian realm of interconnected streets' network directly linked with public spaces that articulate changing vistas [45]. Unfortunately, most of the urban spaces in Cairo's new urban settlements do not seem to contribute to enabling the public life desired, as very few people actually use them. For example, residents of New Cairo tend to avoid public/commercial streets and prefer privately owned upscale shopping malls [1–40]. Shopping malls started offering exclusive urban forms that imitate public life [41], thus increasingly luring upper-class residents of New Cairo away from street shopping [18–34].

However, the concern is that privatization and segregation of public life may affect the urban quality of new settlements in Cairo rather than enable the presence of public life in their urban spaces [1–38]. The quality of public life and the presence of public spaces such as public parks or commercial streets have indeed been lost [6–17] and are needed to be retained for a better urban quality of life. Attempting to restore forms of public life in the planned new suburban settlements in Cairo is in need of much research that investigates the potential approaches.

Accordingly, it demands the role of urban design in creating and restoring urban forms that enrich, uplift, and inspire its users [20]. A community character approach is proposed in that matter, as previously stated, for a better quality of life for a specific community within a specific context [5].

A community character approach towards quality public places

Urban quality of life is a multi-disciplinary concept, a relationship between physical and social dimensions that are interrelated and dependent on each other [28–44]. A balance between both disciplines is needed for a desired quality of life. Several urban theories declare that a desired quality of life is achieved when the urban form is tailored to its cultural context's different needs [5].

A community character to design quality public places requires the investigation of a distinctive identity for a specific place. Investigation includes its built form, landscape, history, and people [5]. Quality spaces initiate a better quality of public life, affect its users, and consequently its community and their quality of life in general. Moreover, public spaces assist in community building through social interaction and different forms of enabling social ties and networks. Designing quality public spaces is required to achieve such an approach, thus creating an integrated society that survives even through critical times and circumstances [31]. Accordingly, an assessment of existing places that indicate factors and attributes of quality throughout the years and the different changes taking place either socially, economically, or politically is necessary.

A purposive selection of public spaces is viewed in Cairo's different compact districts to select those most viable to the study. The purpose of the selection intended by this paper is to investigate spaces that are initially planned to serve the public, indicating those most suitable to the study. Then, it identifies factors and attributes to design quality public spaces adequate and altered to the needs of its users in their specific cultural context [5–11]. In order to assess the quality of the chosen public spaces in Cairo, Egypt, through researcher observation, a viable criterion is needed as a tool for

assessment. The Jahn Gehl assessment tool [16] is the most relevant criterion deducted from the literature for this paper.

Quality public places' criteria assessment tool

The Twelve Quality Criteria is a tool for researching how public spaces are experienced by their users. Initially, there used to be more criteria and after further investigation and multiple studies, they were then eliminated to the presented twelve criteria. They were seen to be viable criteria to the extent of inviting people to come and stay [16]. To be more specific, it evaluates different features of a public space under three main categories: being protective, comfortable, and enjoyable for people spending time there [15].

The first of all three is protection; people will not be invited into a space without being protected of either environmental or human aspects. Basic protection from harm by others and traffic, as well as noise and unpleasant sensory aspects, is critical for people to spend time in a space. Secondly, providing various experiences in a public space with comfort would invite more people. Facilitating walking, standing, sitting, seeing, and conversing, as well as options for play and exercise, are elements of attraction for diverse groups of users. Last but not least, a pleasant and enjoyable space is a key to its success. Thus, offering positive aesthetic and sensory experiences benefitting most of the different local climate conditions all calls for great spaces [15]. Overall, all previous aspects are required to alter user needs and preferences [3], with both good urban and architectural qualities that are pleasant to see and functions properly (Fig. 1).

Methods

Based on the literature review, this paper then aims to identify specific urban design elements for Cairo's community needs and preferences towards quality urban spaces. A comparative analysis study is adopted for building a community character approach for its suburban settlements. In an exploratory method, two case studies are chosen following a purposive selection most relevant to the study. The target is to choose two cases

Fig. 1 Further explanation of the twelve criteria deducted [15, 16] and Author interpretation
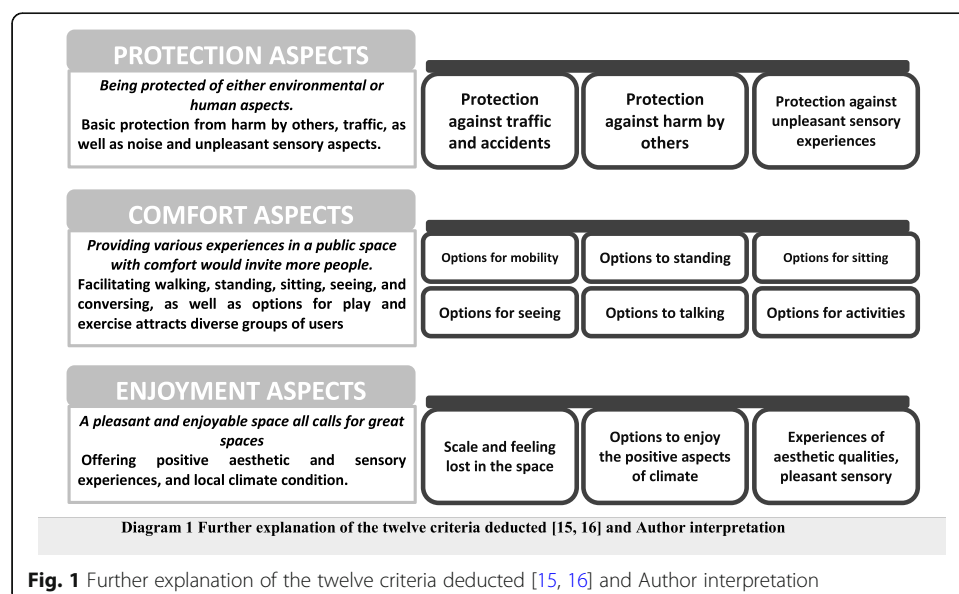
in proximity for users to be familiar with the two of them and enable a reliable comparison.

First, a case study for one of the community livable spaces in Cairo's old compact districts to identify factors of quality design. Al Korba and Roxy Streets in the Heliopolis district seem to be most suitable for the study. The second case study is chosen to represent one of Cairo's new suburban settlement public spaces. In this case, it is important to be an occupied and functioning urban space as Banks Street in New Cairo. The comparison of both case studies is done through a two-phase investigation.

The first phase involves an investigation of both the selected urban spaces in Heliopolis and New Cairo and assessing them according to Gehl's criterion [15, 16]. Data collection for this phase depends on the researcher's participant observation of the cases through repetitive field visits, in addition to an assessment done by professionals in the field using the same assessment tool. Results of this phase are presented through tables and maps for quality assessment of each case study based on Gehl's twelve criteria [15, 16].

The second phase of the study involves the user's input through a survey to identify their needs and preferences of their urban spaces. A qualitative questionnaire is designed in a comparative manner [46] between the two selected case studies of the urban public using Gehl's twelve criteria [16] as well. Data collection of the survey requires distributing an E-link https://forms.gle/CwJRS8fut7bAwhFx9 through e-mails and different social media platforms. A snowball method is used to assure the spread of the survey to reach around 200 to 250 residents of New Cairo. The target was to reach around 100 to 150 residents within the legible age group of 18 to 60 years old and got results of 127 participants. Those who are fortunate have experienced both the selected case studies at different times, whilst those older than 60 years may demand different interactive levels and lifestyle in the use of urban spaces.

Analysis of survey results at first intends to identify the user's assessment of quality for both the selected case studies. In addition, it correlates the twelve criteria to user needs [3] and identifies factors and design attributes most appropriate to their cultural context. Discussion of the findings would then require comparative analysis tables of both cases altogether. Additionally, elaboration of Gehl's twelve criteria [16] generates appropriate guidelines for quality design of urban spaces in Cairo's new suburban settlements.

Assesment of Heliopolis's urban public space

Heliopolis, being one of Cairo's old districts, was established by Baron Empain at the beginning of the twentieth century by the year 1904–1905 [35]. In addition, Heliopolis is one of the closest to the west side new suburban settlements, the concern of this study; it can be adequate for this exploratory assessment (Fig. 2).

This new district was initially designed for the elite community, a "city of luxury and leisure" with broad avenues offering a European lifestyle [30]. In the initial planning of Heliopolis, various public places were designed to provide a luxurious and quality lifestyle for its targeted residents, including a golf course, racetrack, and park to accommodate the lifestyle of the targeted dwellers [26–30], in addition to public streets with mixed-used activities designed to foster walkability for its target users' needs and lifestyle [30] (Fig. 3).
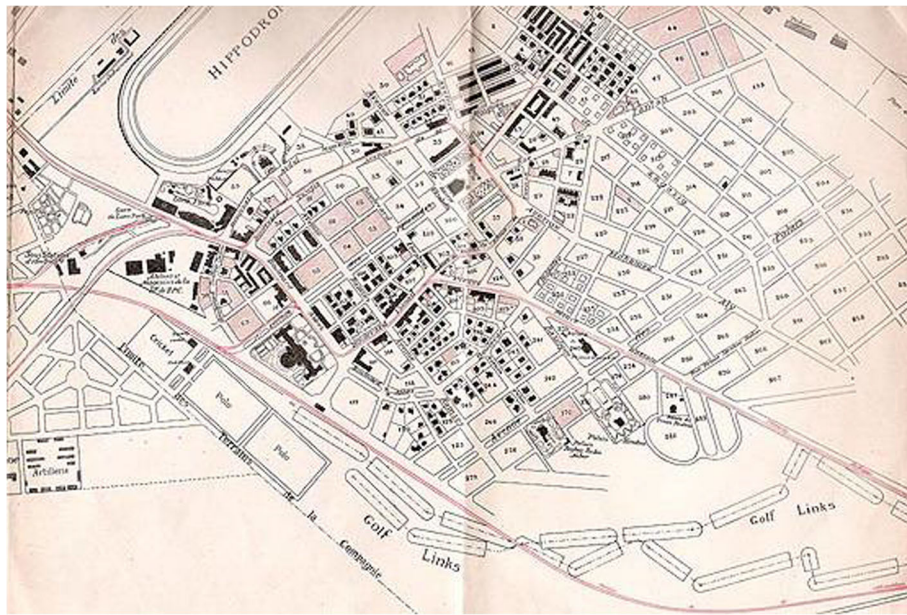
Fig. 2 Heliopolis map that explains public spaces and activities [39]

During the 1952 revolution and later by the 2011 revolution phase, various changes social, political, and economic affected Cairo, Egypt districts [40]. The Heliopolis district and its public streets merged went through different changes [30]. Nevertheless, they managed to maintain their livability and ability of attracting different users. Accordingly, assessment of the Heliopolis public places is needed for the purpose of this paper to identify aspects of quality that are capable of enhancing its community needs.
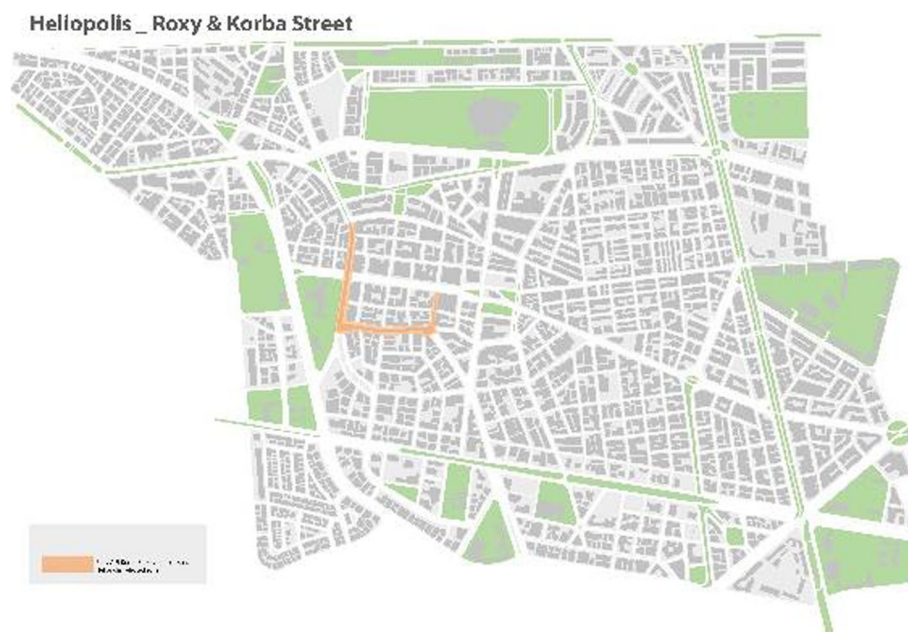
Fig. 3 Heliopolis map, Korba and Roxy Streets as public space (Author)

Table 1 Al Korba, Heliopolis public spaces assessment (Author)

|	#	The criteria	Good Quality	Average Quality	Poor Quality	NA	#	Community Character
Protection	1	Protection against traffic and accidents		2#			7#	*Arcades offer Pedestrian separation and climate protection*
	2	Protection from other's harm (Safety)	3#					
	3	Protection against pollution		2#				
Comfort	4	Possibilities for walking	3#				10#	*Pleasant walk with window shopping and lingering under tree shade and arcades.*
	5	Possibilities for standing	3#					*Diversity of activities, uses, and users*
	6	Possibilities for sitting			1#			
	7	Possibilities to see (view or scenery)		2#				
	8	Possibilities for hearing and talking			1#			
	9	Possibilities for active space (playing, events, speeches)	3#					
Enjoyment	10	Enjoying human-scale spaces and services	3#				9#	*Enclosed human scale. Homogenous architecture and ornaments.*
	11	Enjoying positive local climate	3#					
	12	Enjoying aesthetical, beautiful space	3#					
Total count of occurrence			7	3	2	0		
							Key	SCORE
							Good q.	3 #
							Average q.	2 #
							Poor q.	1#
							NA	0 #

A distance of 1 km in El Korba and Roxy Streets is chosen for field observation and assessment using Gehl's twelve criteria [16] as mentioned:

First, in terms of protection aspects, the presence of arcaded sidewalks provides a safe walkway for an uninterrupted walk that is protected from both traffic and microclimatic conditions. In terms of harm protection from others, security is visible through the area because of the presence of heritage churches of heritage within the district. Yet, one main problem is the overcrowding and excessive traffic that makes it harder to find a parking space and affects the feel of safety in the space.

Second, the comfort aspect seems to obviously present in the space, encouraging diverse street activities and uses for diverse user groups. It offers opportunities for users to walk, sit, stand, or linger having a nice conversation. Third enjoyment aspects, an obvious space attraction comes from its homogenous architectural identity that gives the space a unique vibe. The ornaments and aesthetical building details are appealing to their users at every visit. Street intimate proportion creates a protected and enjoyable environment where users do not feel lost in the space and enjoy its view (Table 1).

The suggested community character approach from Heliopolis's public space can be space diversity of uses and users' variety of activities and options that suits various social groups. The presence of multifunctional arcades adds more flexibility to the space. The special vibe of the space is seen in its scale and enclosure, homogenous

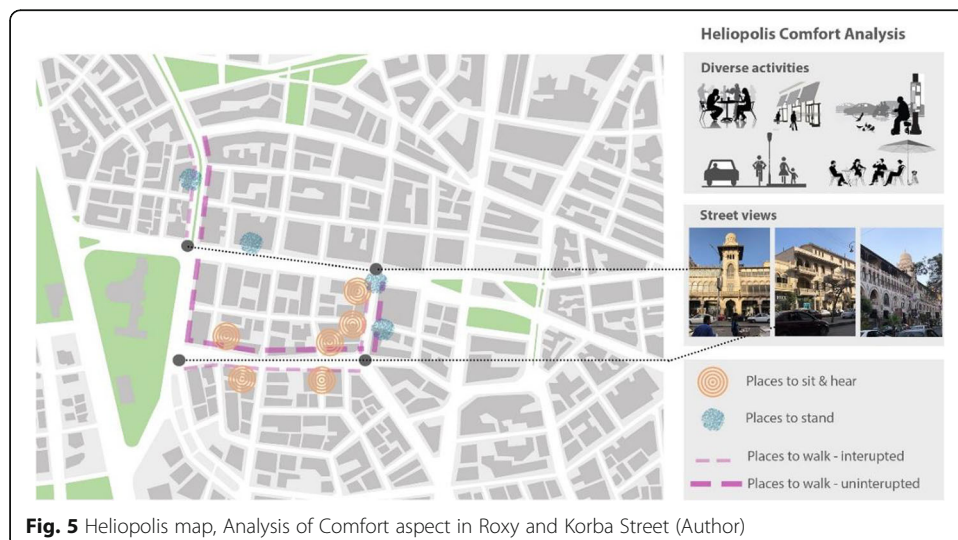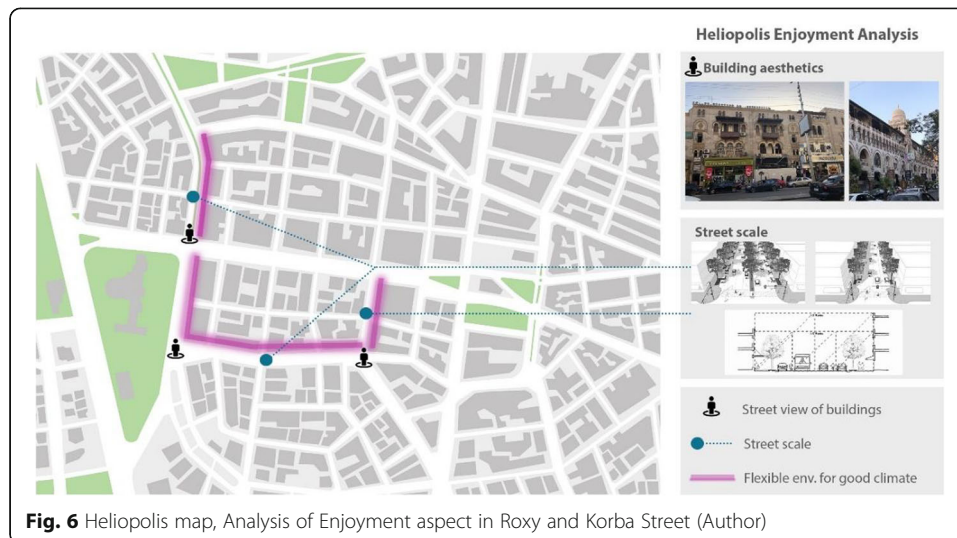**Fig. 4** Heliopolis map, Analysis of Protection aspect in Roxy and Korba Street (Author)
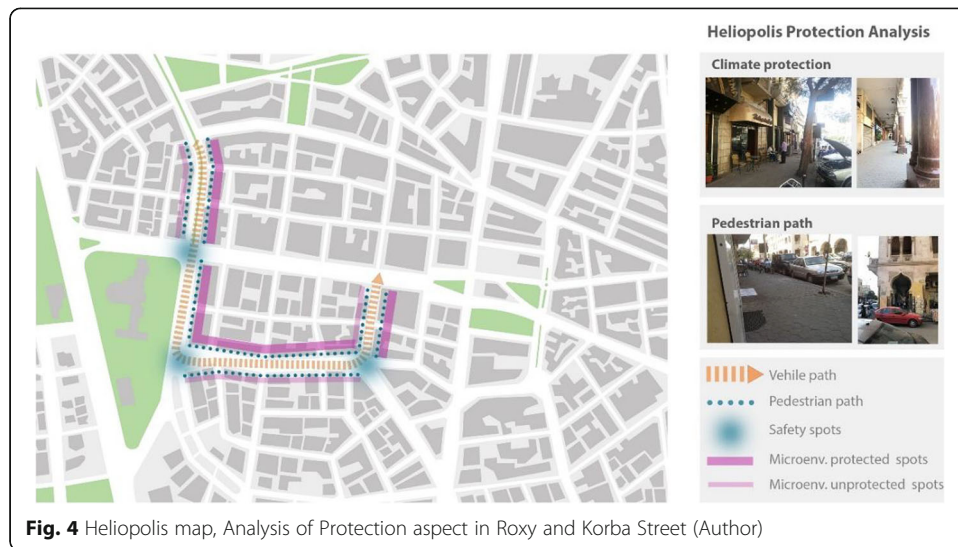
architecture to ever-changing scenes of building ornaments. Overall, it is a place that holds meaning and value [4] to its users (Figs. 4, 5, and 6).

Assesment of New Cairo's urban public space

The end of the eighties and beginning of the nineties started the development of New Cairo which started basically with three settlements (first, third, and fifth settlements) [25–47]. It was basically intended to provide a variety of housing for different social groups [38–47]. Due to political and economic factors, private investments started focusing on higher social groups. This affected different forms of life in New Cairo as well as other new settlements including residential, educational, and recreational aspects [13–45] (Figs. 7, 8, and 9).

Theoretically, New Cairo's settlements were meant to create articulated pedestrian spaces with ever-changing vistas of landscape, exciting displays, activities, and services in a well-defined urban form [13–45]. In reality, the presence of pretended/ private-

Fig. 5 Heliopolis map, Analysis of Comfort aspect in Roxy and Korba Street (Author)

Fig. 6 Heliopolis map, Analysis of Enjoyment aspect in Roxy and Korba Street (Author)
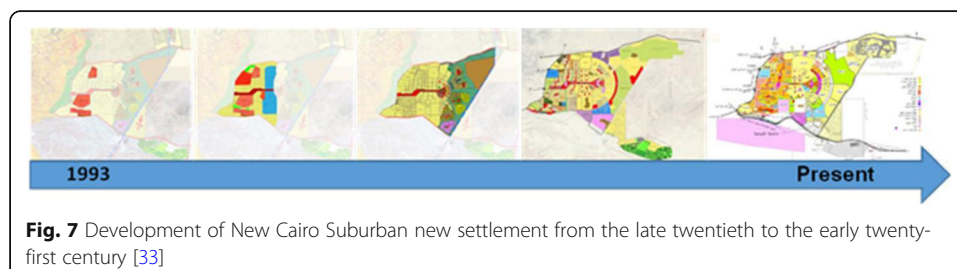
public spaces is dominating its urban space [1–38]. Thus, fulfilling the private sector's aim to supply the needs and lifestyle demands of its residents [35–47]. This came at the cost of public space development in New Cairo's urban space and affected its quality of public life (Fig. 10).

One of these main urban spaces designed to serve the public in new Cairo, the fifth settlement, is the zone between the two main streets in New Cairo (South 90's and Northern 90's street) known as the Banks Street area. This paper will focus on assessing its quality as a public space based on Jan Gehl's [16] criterion to identify the missing factors and attributes needed for a more successful public space:

First, the protection aspect is where we can instantly spot the vehicle dominance over the space. A wide-scale street with major traffic flow interrupts pedestrian movement especially due to the lack of proper sidewalks occupied by most cafes and restaurants in the street. Even more, the most shaded and secure areas for an environment protected from micro-climatic conditions are only offered by private cafes and restaurants. Minimal vegetation and trees are present to provide proper protection. The presence of banks and companies within the areas offers security and a feeling of safety for street users. Yet, proper lighting and security spots should be implemented in more spots within the area.

Second is the comfort aspects; it seems hard to have a comfortable walk, stand, or linger on the sidewalk with minimal window shopping opportunities. Perhaps some younger user groups can use their cars as an opportunity to linger and have

Fig. 7 Development of New Cairo Suburban new settlement from the late twentieth to the early twenty-first century [33]

Fig. 8 Urban spaces (streets and parks)

a conversation especially at night when traffic is less crowded. Even more, seating is only offered through the private cafes and restaurants that mostly target a specific social group of users.

Third, the enjoyment aspects are affected by two main points, the architectural character and street scale. Wide-scale streets within this area might be useful in easing traffic yet wide pedestrians might feel a little lost in the space with minimal protection of climate provided. The smaller street proportion seems more appealing to pedestrians who are partially protected from bad climate conditions. The heterogeneous architectural character of the street might not appeal to different users; it does not give an identity to the space or offers an enjoyable aesthetic view that encourages multiple visits (Figs. 11, 12, and 13), whilst, on the other hand, a homogenous architecture with a strong identity as seen in Heliopolis enables enjoyable view for its users (Table 2).
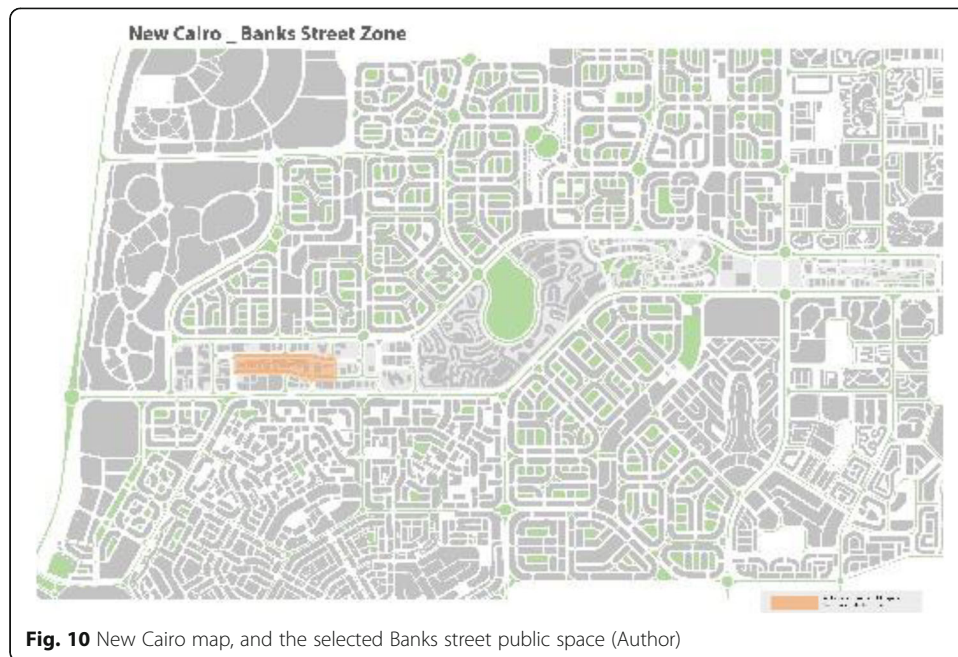
Results

The survey is divided into three main sections. The first section is demographic, then the second section focuses on livability and use of urban spaces. The third and most important section is the user's evaluation of the two selected urban spaces in a comparative manner using Gehl's [16] criterion.

First, the demographic indicates that only 3.9% of the responses did not meet the age criteria. Majority of respondents used to previously live in Nasr City and Heliopolis
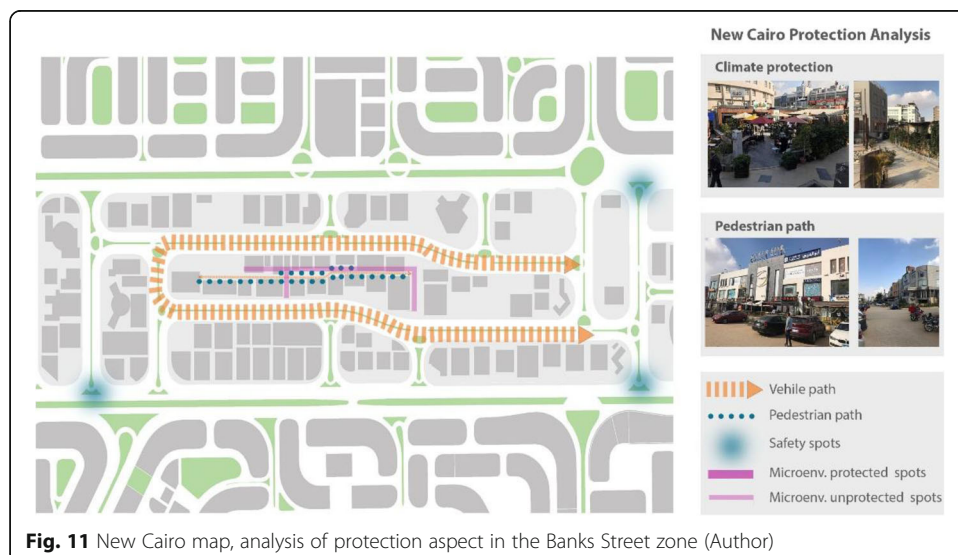

Fig. 9 Urban private-public spaces

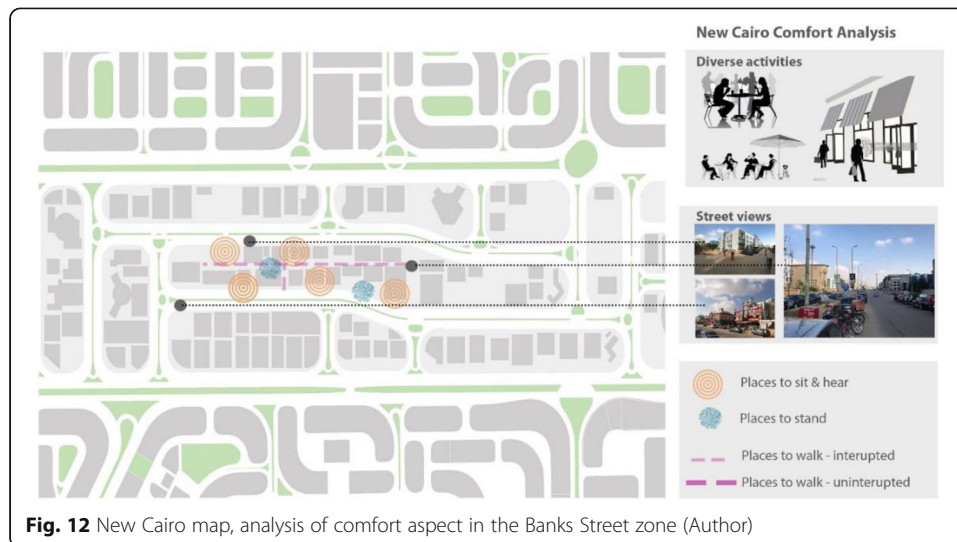**Fig. 10** New Cairo map, and the selected Banks street public space (Author)

(old districts in Cairo) and have been living in New Cairo for around 5 to 10 years at most. Second, livability section results show that public spaces are frequently used on a monthly or weekly basis on an average stay of 2 to 4 h at a time. Targeting cafes and restaurants enjoying a pleasant view is the most frequent activity followed by walkability and window shopping (Figs. 14 and 15).

Results of the third and most important section are expected to explain user needs based in terms of protection, comfort, and enjoyment aspects. For example, protection from traffic and the harm of vehicles were assessed as 31% good quality, 56% average quality, and 10% poor quality in Heliopolis, versus 14%, 49%, and 33% respectively in New Cairo, taking into consideration that over 80% assured the importance of feeling safe from traffic in public space.

Fig. 11 New Cairo map, analysis of protection aspect in the Banks Street zone (Author)

Fig. 12 New Cairo map, analysis of comfort aspect in the Banks Street zone (Author)

In terms of comfort, the majority of respondent users' walkability experience in Heliopolis was an average quality of 54% and in New Cairo was poor quality of 43%, taking into consideration that over 70% indicated the importance of walkability. For public space, the ability in providing a variety of seating options, Heliopolis showed 44% average quality versus 55% poor quality for New Cairo. The presence of a variety of seats seems to be very important to over 50% of the users (Figs. 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, and 26).

In the assessment of enjoyment aspects, 29% of users felt well enclosed in the Heliopolis public space, whilst in New Cairo, 36% of users felt lost in its space. For aesthetic satisfaction of the space, Heliopolis indicated a huge difference, where 56% enjoyed its architecture and buildings. In New Cairo's space, it was only 14% as good quality whilst 81% of users' assess it as average or poor quality knowing that over 64% indicated the importance of place aesthetics.


Fig. 13 New Cairo map, analysis of enjoyment aspect in the Banks Street zone (Author)
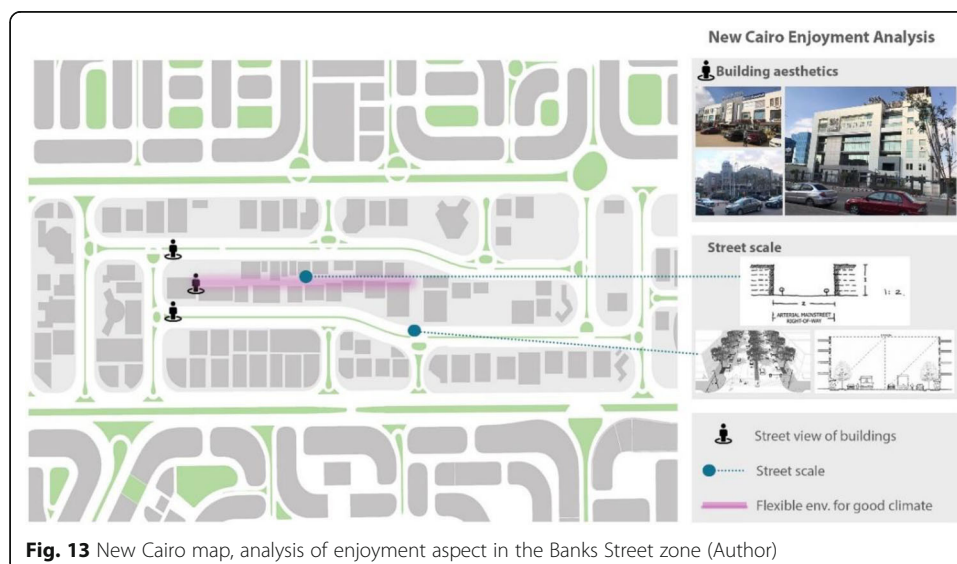
Table 2 Banks Street, New Cairo public space assessment (Author)

	#	The criteria	Good quality	Average quality	Poor quality	NA	#	Community character
Protection	1	Protection against traffic and accidents		2#			4#	*Less crowded with better parking at night*
	2	Protection from other's harm (Safety)		2#				
	3	Protection against pollution				0#		
Comfort	4	Possibilities for walking			1#		5#	*More quite for better conversation opportunity*
	5	Possibilities for standing				0#		
	6	Possibilities for sitting			1#			
	7	Possibilities to see (view or scenery)			1#			
	8	Possibilities for hearing and talking		2#				
	9	Possibilities for active space (playing, events, speeches)				0#		
Enjoyment	10	Enjoying human scale spaces and services			1#		2#	*Providing services for user needs*
	11	Enjoying positive local climate			1#			
	12	Enjoying aesthetical, beautiful space				0#		
Total count of occurrence			**0**	**3**	**5**	**4**	Key	SCORE
							Good q.	3 #
							Average q.	2 #
							Poor q.	1#
							NA	0 #

Comparing the efficiency and quality of the two selected cases overall indicates 44.9% user's preference of Al Korba Heliopolis public space over 12.6% preferring New Cairo's public space. A fair percentage of 28.3% have no problem for both public spaces equally and 14.2% evaluated either of them as quality public space. Justifications for the user's choices varied from traffic problems to the presence of landscape and greenery, more diversity of users needed, and place cleanness as well as place uniqueness and vibes.

Fig. 14 How often to visit public spaces (Author)

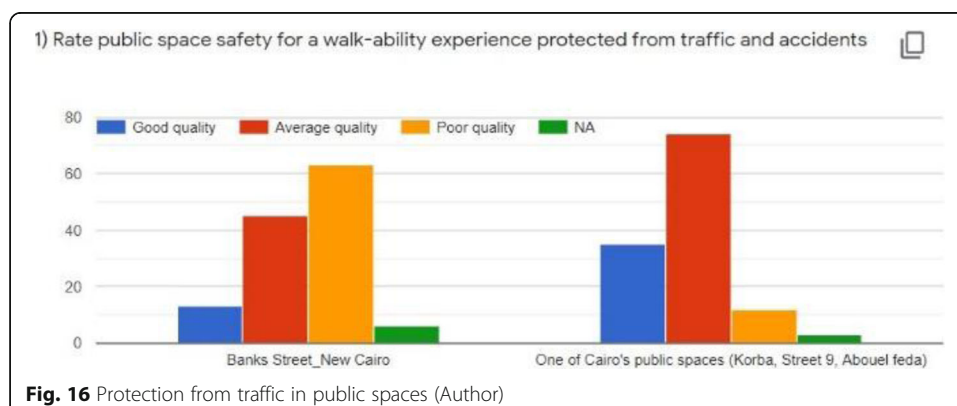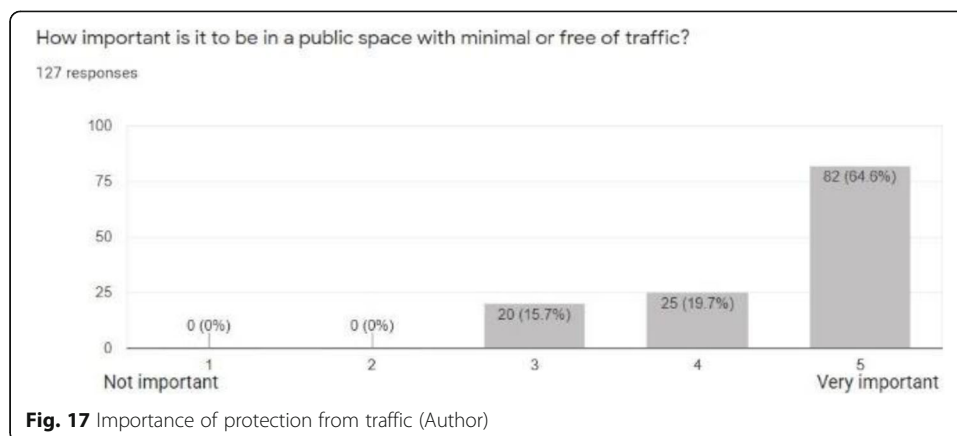**Fig. 15** Activities in urban spaces (Author)
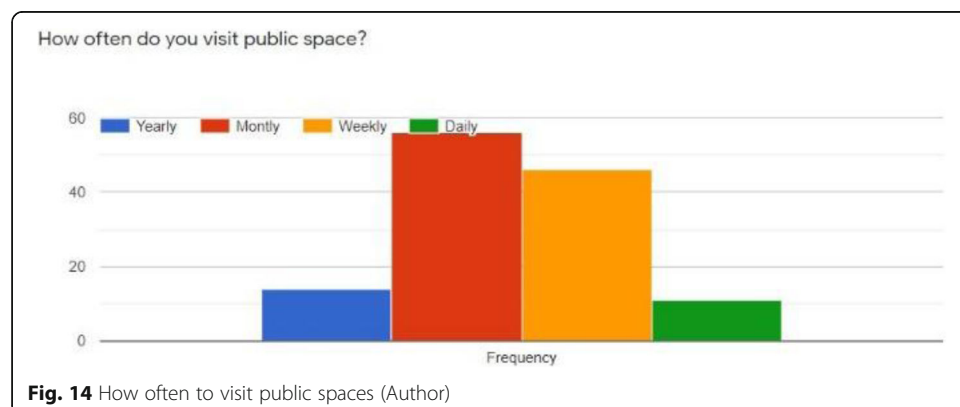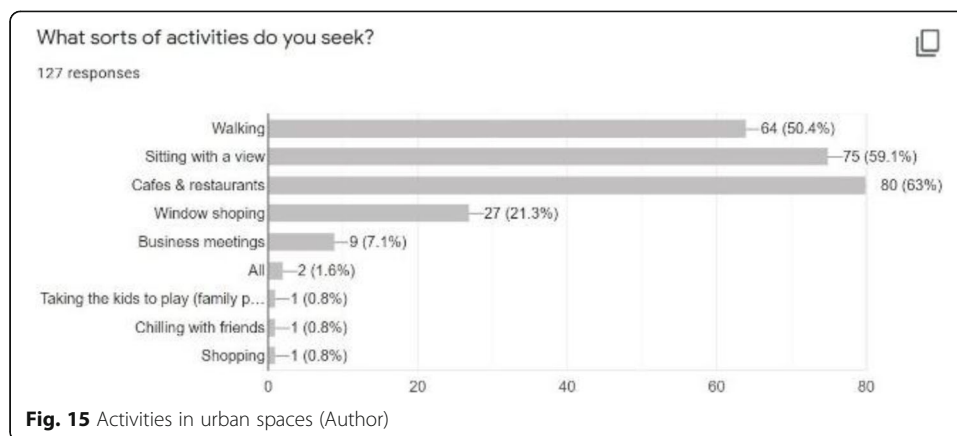
Discussions

The aim of this paper is to reach a better understanding of a community character approach and its potential in improving the quality of public spaces for a specific cultural context, thus enabling places in the urban space that hold meaning for their users and fulfil their needs [4]. The comparison of New Cairo's public space with other quality public spaces in Cairo's compact districts is represented by the Heliopolis district in this paper. This is thus used as a first phase of this study as shown in the comparison table (see Table 3).

First of all, based on the researcher's evaluation of protection aspects, Heliopolis public spaces scored "7" in comparison to only "4" in New Cairo's public space. Al Korba and Roxy Streets are overcrowded, yet acceptable because pedestrian movement is separated through both covered and uncovered walkways. Additionally, the presence of trees and arcaded walkways provides climate protection. On the other hand, New Cairo's public space is less crowded, yet needs better light and security spots to increase levels of protection, even though walkability seems harder as opposed to the initial design intended for New Cairo to be a pedestrian-friendly environment [45]. Obviously, the factor of safety does matter and thus requires higher design measurements.

Second is the comparison of comfort aspects' evaluation in both public spaces. Heliopolis's public spaces scored "10", whilst New Cairo's scored half that number "5". Whilst Al Korba and Roxy Streets in Heliopolis offer an opportunity to window shop, walk under the arcades, and choose between different seating options, this is not

Fig. 16 Protection from traffic in public spaces (Author)

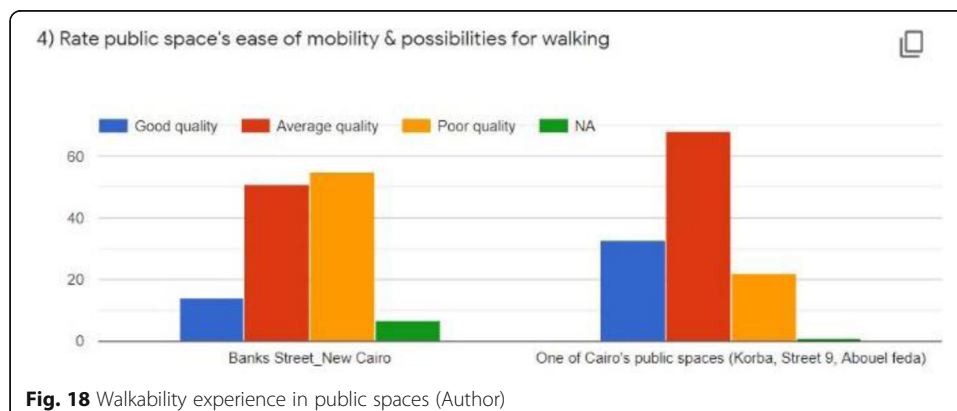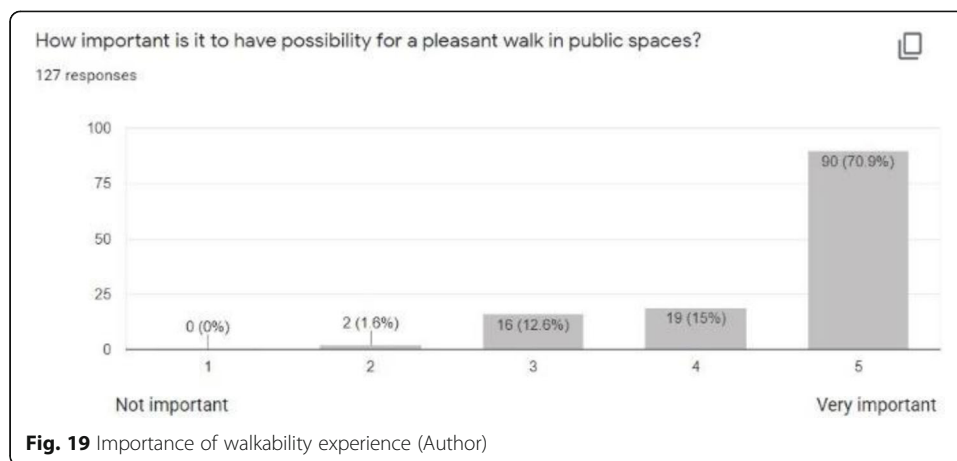**Fig. 17** Importance of protection from traffic (Author)

available in Banks Street, New Cairo. Most activities offered are either services or inclusive to a specific group of the community, known as social exclusion, that is seen in most of Cairo's new settlements [25]. Walkability and other associated activities are an important aspect; the harder it is to enjoy a comfy walk with the interrupted sidewalks, the more it affects space quality.

Third, aspects related to enjoying the space scored "9" in the Heliopolis public spaces and "2" for New Cairo's. A noticeable difference that can be related to space nature from scale to architecture to its adaptability to different climatic conditions. In Al Korba and Roxy Streets, the homogenous architecture is designed to offer a luxury experience for its users since its initial design [29]. Thus, street scale is more intimate and allows better views of the street and its architecture. In Banks Street, New Cairo space legibility seems lost due to its huge scale, feeling disoriented. The lack of homogeneity in building design gives a feeling of distraction and less place attachment.

After research observation of both spaces, several aspects were highlighted from the international criteria to improve space quality within this specific context [15, 16]. The presence of arcades or elements with multiple functions is needed. Greenery adds value to the space as well as shade and protection. Street homogeneity and enclosed and safe spaces are as important. Even more, a space with special vibes creates its own points of attraction to users. In addition to having an ever-changing experience, such as the presence of an ornament view that changes with the effect of shade and shadow for a special experience at different times of the day.

Fig. 18 Walkability experience in public spaces (Author)

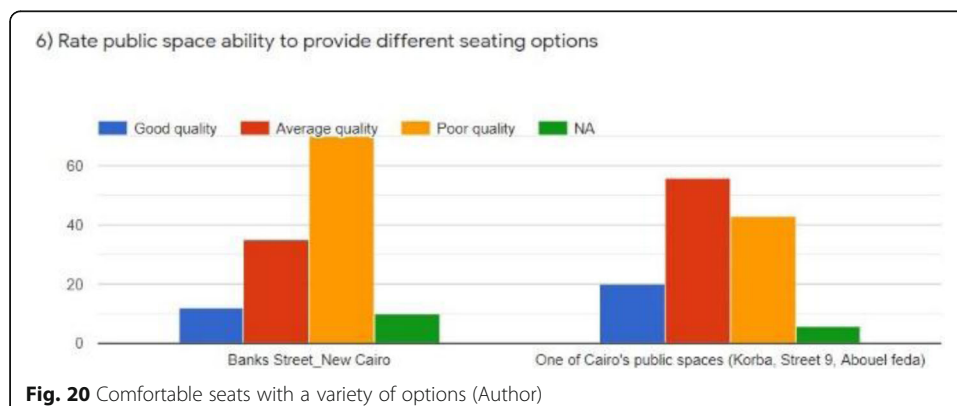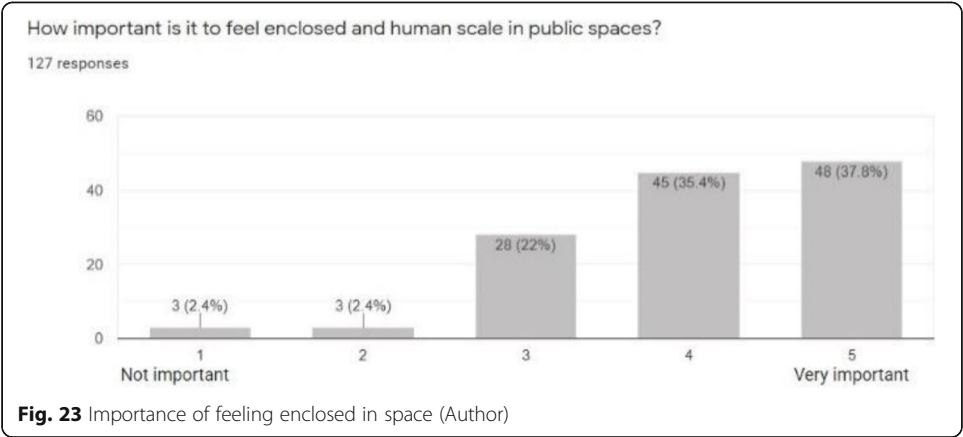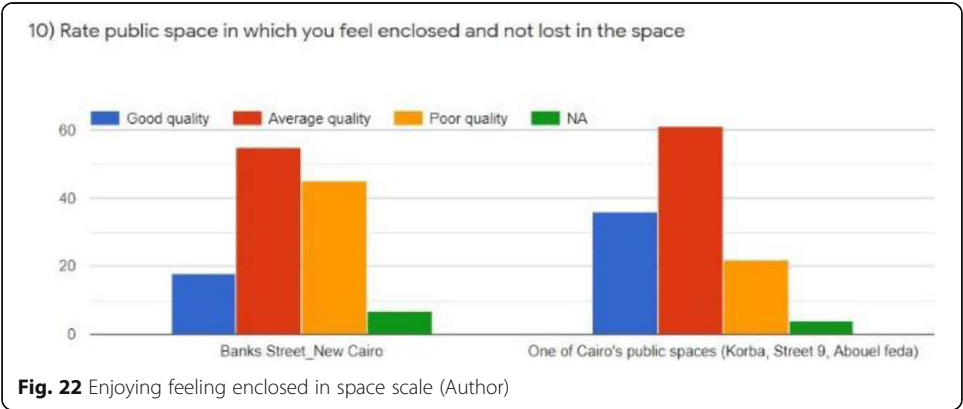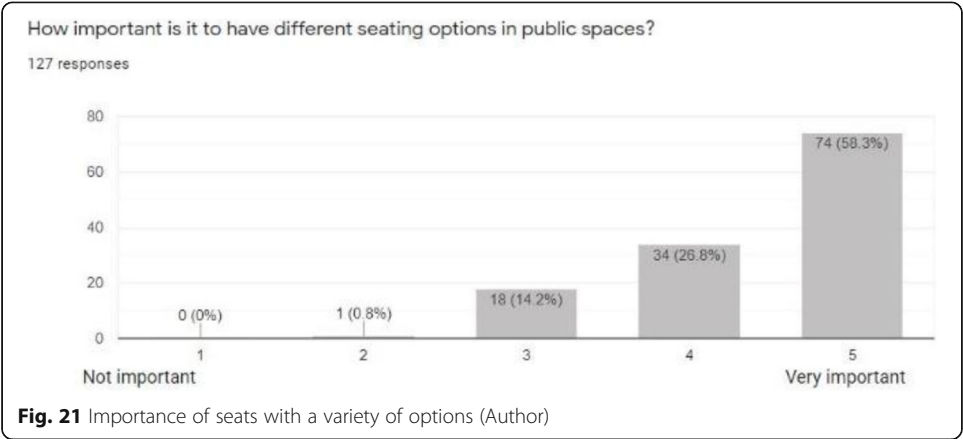**Fig. 19** Importance of walkability experience (Author)

The second phase of the study concludes the user's need input from the conducted survey, divided into three categories (see Table 4). First, highlighted several points that are already advised in aspects shown by the literature. Second, the user's input indicated their need for specific points that can fit the criteria yet needs to be considered within the design process. Last, the user's comments suggested a few aspects that mattered to them and need to be added to the current international criteria of how to design quality public spaces.

Investigating both phases of the study shows that users are quite aware of their needs. Results concluded from the physical observation of the two comparative cases indicate points of advantage to consider and others to avoid in design. The user's evaluation confirmed most of the researcher's observation and added further points to be considered for a community character approach. Accordingly, several points could be highlighted as an elaboration to the literature that this community of users requires. Furthermore, a couple of additional aspects are suggested for a better design of public spaces that suits this specific cultural context (see Fig. 27).
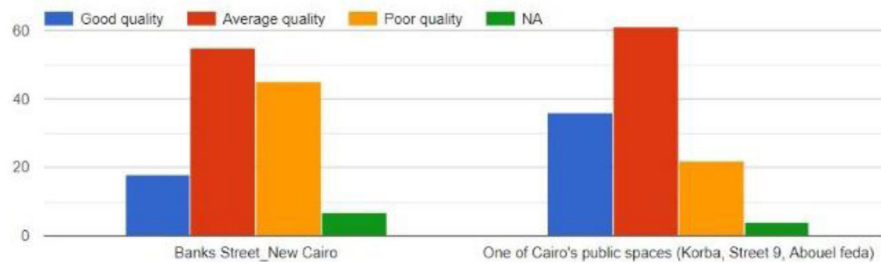
Community character elaboration suggests in terms of protection aspects the presence of good signs to avoid being lost as well as more parking provided with ease of access. To provide more comfort in the space proper, accessibility is needed by different means of transportation including vehicles as well as providing proper pedestrian and bike lanes. Designing the space to be age appropriate is essential for age diversity
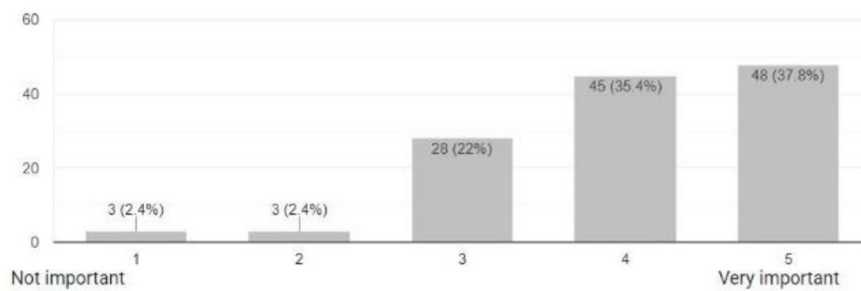

Fig. 20 Comfortable seats with a variety of options (Author)

Fig. 21 Importance of seats with a variety of options (Author)

Fig. 22 Enjoying feeling enclosed in space scale (Author)

Fig. 23 Importance of feeling enclosed in space (Author)

Fig. 24 Enjoying place aesthetics in public spaces (Author)

Fig. 25 Importance of enjoying place aesthetics (Author)
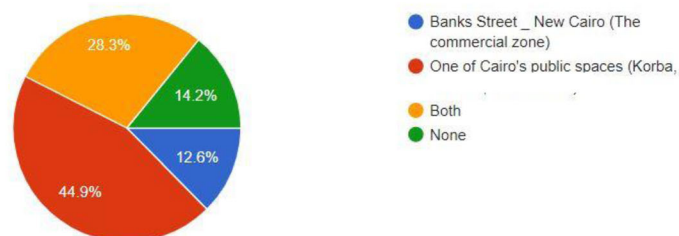
Fig. 26 Preferable public space chosen by users (Author)

Table 3 Comparative analysis of AL Korba, Heliopolis, and Banks Street, New Cairo public space assessment (Author)

Quality		Heliopolis_EL Korba and Roxy Street				NO.	New Cairo_Banks Street				No.	Community Character — Researcher's Comparative Assessment
		Good Quality	Average Quality	Poor Quality	NA		Good Quality	Average Quality	Poor Quality	NA		
Protection	Traffic					7					4	· Arcades and trees offer protection from wind, sun and rain · Vital secured space · Separation of pedestrian and vehicle movement
	Harm	3#	2#					2#				
	Pollution		2#					2#		0#		
Comfort	Walking	3#				10			1#		5	· Presence of arcaded walkways enable comfortable walk whilst window shopping · Diversity of seating options for different social groups and ages · Offering possibility to adapt different activities at different times
	Standing	3#								0#		
	Sitting			1#					1#			
	Seeing		2#						1#			
	Talking and hearing			1#				2#				
	Playing	3#								0#		
Enjoyment	Scale	3#				9			1#		2	· Intimate scale for better space enclosure and enjoyment of views · Homogeneity and building ornaments add value to the space
	Climate	3#							1#			
	Aesthetics	3#								0#		
Total no. #		7#	3#	2#	0#		0#	3#	5#	4#		
Cons.		Heliopolis					New Cairo					
		Overcrowded and parking problems.					No opportunity to walk and public seats					

Key: SCORE
Good quality — 3 points
Average quality — 2 points
Poor quality — 1 point
Non-applicable — 0 points
— Count of quality occurrence

Table 4 User need input of Korba, EHliopolis and Banks Street, New Cairo public spaces survey results (Author)

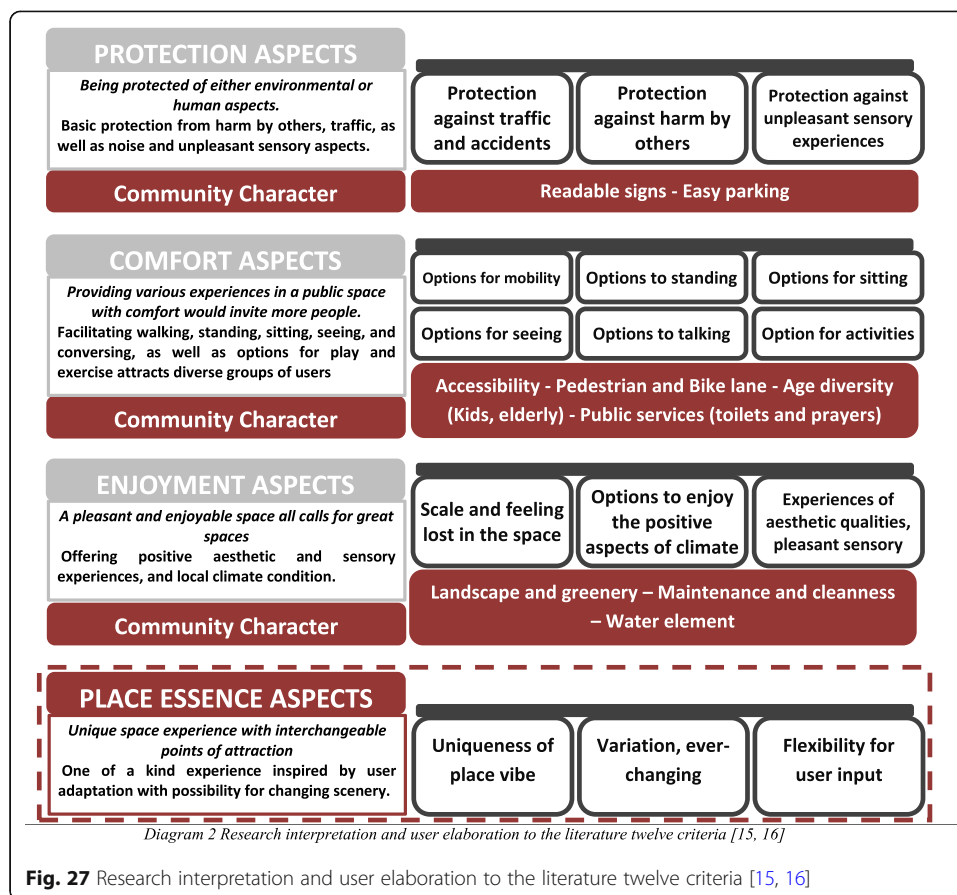|		Heliopolis_EL Korba and Roxy Street	New Cairo_Banks Street	Community character
Quality		User evaluation of Gehl's criterion aspects		User need input
Protection	Traffic Harm Pollution	*Overcrowded, yet worth the visit.* *More safe in the space and protected from bad weather by trees.*	*Less crowded and better in finding parking spots at night-time.* *Less safe and needs more light.*	• Clear signs for space legibility • More and easier parking required
Comfort	Walking Standing Sitting Seeing Talk and hear Playing	*Enjoy staying, walking and sitting the place.* *Crowded space but worth staying in the various offered seating options.* *Enjoy window shopping and options for different activities at different times.*	*The space is essential for services and running errands not long visits.* *No variety of seats but enjoy the cafes and restaurants.* *Use parked cars as gathering spots to talk and linger for specific age group.*	• Good accessibility for diverse users • Children friendly and age diversity appropriateness • Public services (prayer areas and public toilets) • Bike friendly (bike lane provided)
Enjoyment	Scale Climate Aesthetics	*Enjoy watching a vintage place, with special architecture ornaments.*	*No specific view or defined architecture identity.*	• Homogenous architecture • Landscape and greenery • Water elements • Maintenance and cleanness
Quality		**User input to criteria**		
Additional aspects		• Places with unique vibe and essence • Diversity and variations • Sustainable and adaptive to user needs		**Place essence** (to be added criterion)

including kids and the elderly with provided services. A space could be enjoyed more with the presence of landscaping and greenery water elements or other hardscape elements. Additionally, a clean space that is well maintained creates an enjoyable environment for its users.

Place essence is a further addition to elaborate the international literature of public space design [7] to be appropriate for users of new suburban settlements in Cairo, Egypt. Research observations showed that a space with a special and unique vibe through its architecture, greenery, or different views attracts more users. User's survey confirmed this observation and highlighted the importance of place essence, vintage vibes, and uniqueness in a space as a point of interest. Ever-changing vistas and scenery adds more value to the space and can be present with various elements of natural or built environment. Users build place attachment when they add their input to the space; thus, space flexibility to change could be an advantage [3].

Conclusions

Overall, it could be concluded that to achieve the paper's aim in the specific cultural context [5–11] of Cairo, Egypt, quality public spaces need to be designed following the twelve criteria suggested by the literature in addition to the elaborated guidelines as a suggested community character approach. Findings of the study include an elaboration on Jan Gehl's twelve criteria either by highlighting the importance of existing aspects or the addition of further criteria that showed value to public space quality and their users. The findings provide guidelines that help in designing quality public spaces in

Diagram 2 Research interpretation and user elaboration to the literature twelve criteria [15, 16]

Fig. 27 Research interpretation and user elaboration to the literature twelve criteria [15, 16]

Cairo's new settlements. The added value from this study is in identifying a set of factors or attributes that consider users' needs for a given cultural context.

The approach suggested focuses on specific guidelines for quality public space design that are elaborated from the study most suitable to the urban space in Cairo's new suburban settlements. Yet, further interpretation to this approach could be adopted by researchers to include a wider exploration of quality urban spaces in Cairo, Egypt's old compact district that shows potential of adding up to the literature on the matter [12]. A chronological selection of public spaces in Cairo, Egypt's traditional districts could be adopted for a broader and better elaboration of the provided guidelines. The Heliopolis district was the start of planning suburban districts, followed by Maadi, Zamalek, and Garden city gradually to Mohanseen, Nasr City, until the start of new suburban settlements. On the other hand, New Cairo was an example of Cairo's suburban settlements; thus, investigation of different new suburban settlements is needed for better understanding and validation of this paper's aim.

Additionally, urban designers need to acknowledge Egypt's rich cultural context that is dense with different cultures and subcultures. Implementation of a similar approach needed to build a strong community character suitable for public spaces in various cultural contexts in Egypt [11]. Another issue that needs further investigation is the ability of private investors in designing pretended public spaces that fulfil the user's needs of Cairo's new suburban areas as in New Cairo. There seems to be a gap between designing public spaces and pretended public spaces that attract different users and fulfil their

needs and preferences. This raises the concern of privatization of public life in Cairo's new settlements. Thus, bridging this gap could be achieved through implementation of the suggested guidelines for quality public space design.

Availability of data and materials
All data generated or analysed during this study are included in this published article from images and analysis maps done by the author, in addition to the data of questionnaire analysis done with the assist of Google forms are available on Google drive through the provided link https://forms.gle/CwJRS8fut7bAwhFx9 accessible for participation.

Declarations

Ethics approval and consent to participate
The submitted work is original and has not been published elsewhere in any form or language.

Consent for publication
All participants gave their consent for their data to be published in the journal article.

Competing interests
The authors declare that they have no competing interests.

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