The Shifting Urban Role of Buildings' Facades: A Diachronic Analysis of El Korba

Virginia Bassily, Sherif Goubran

Abstract—In heritage conservation and revival, much of the focus is placed on the techniques and methods to preserve, restore, and revive heritage structures and locations. However, more attention needs to be drawn to how deterioration happens and its effect on the area's character and socio-economic status. To this end, this research aims to examine the decline and its effect in the El Korba area in Heliopolis, Cairo, Egypt. El Korba was designed with a unique architectural character to stimulate social and economic life. However, the area has been on a path of physical deterioration that is corroding the social life on its streets. This research uses diachronic analysis in Ibrahim El-Lakkani Boulevard of El Korba based on a previously developed framework that connects buildings' architectural features to the degree of social interaction in the street to document the changes that the building deterioration could have caused. Architectural features of the street level during both the original state (1906) and the current state (2021) are broken down and categorized in those six parameters to understand their decline or improvement over time. We find that the parameters that have decreased over the years and caused the deterioration are complexity and architectural character, permeability, territoriality and personalization, and physical comfort. Based on these findings, revival projects can focus on physical parameters that create synergistic benefits by preserving and renewing heritage locations and revitalizing their socio-economic potential.

Keywords—Architectural character, heritage building conservation, enclosure, ground-floor use, El Korba, visual and physical permeability, personalization, physical comfort, social life, territoriality.

I. INTRODUCTION

EL Korba has always been noted for its strong architectural character that stimulates social life. This is due to a few factors present in El Korba and not in other places in Cairo. As Fig. 1 shows, Heliopolis was initially designed in 1906 as two 'oases' that were to be connected through a big avenue. The first oasis (where El Korba is now) was a residential area for the high-income class and foreigners, while the second oasis, much farther from Cairo, was for the lower-income classes [1, p.7]. Later, during 50's and 60's, the old part of Heliopolis became its center, which is now known as El Korba. This part still included the commercial functions; all the newly developed parts following this were mainly residential [1, p.33]. Later, specifically during the Infitah (globalization) era, Heliopolis went through uncontrollable changes and expansions that were clearly manifested in the buildings' changed facade designs. Despite all that, the district is still one of Egypt's most popular areas for socialization [2, p.69]. However, it is essential to

question: How has the socialization potential of El Korba district changed over time: from its original design to today?
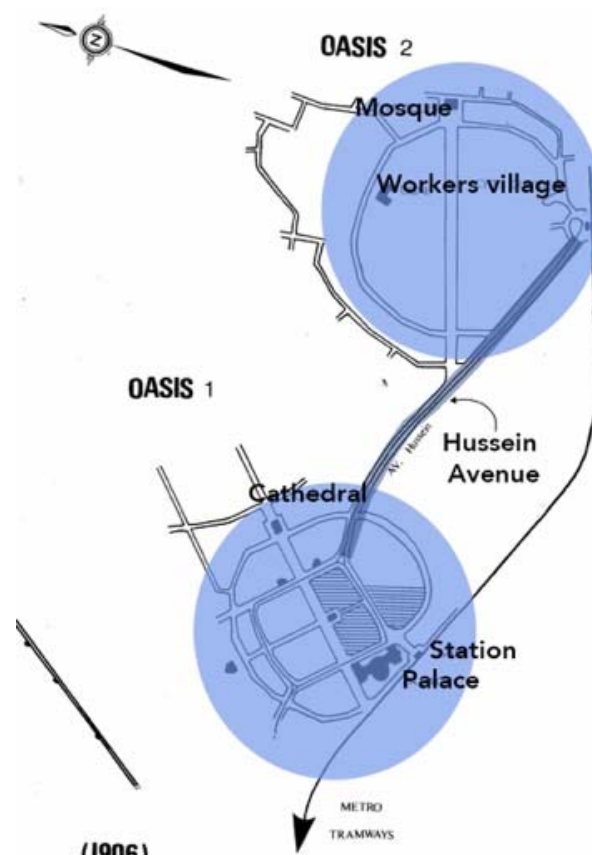

Fig. 1 Original Heliopolis Design in [3, p.61] (annotated by author)

Many theorists have discussed the importance of place-making and social interaction between people in the design of cities. Such theorists include Jane Jacobs, Jan Gehl, and Henri Lefevre. Jane Jacob's 'Eyes on the Street' theory [4] proves that buildings that promote social activities in the street make for safer and better looked-after cities. Jan Gehl's '5 Rules for Designing Great Cities' [5] include making public life the driver of urban design and designing for multisensory experiences. Henri Lefebvre's 'The Production of Space' [6] urged architects and designers to focus on the 'production of space' rather than the 'things in a space'. Lefebvre's seminal work proves that what happens in a space from interaction with a building to interactions with one another is more important

Virginia E. Bassily is a researcher in the Department of Architecture, School of Sciences and Engineering, The American University in Cairo, New Cairo, Egypt (corresponding author, e-mail: vebassily@aucegypt.edu).

Sherif Goubran is an Assistant Professor in the Department of Architecture, School of Sciences and Engineering, The American University in Cairo, New Cairo, Egypt (e-mail: sherifg@aucegypt.edu).

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than what a space simply encompasses of objects. He goes on to prove this point further by stating that, "In designing a facade and its ornamentation, the architect helps animate the street and contributes to the creation of urban space" [6, p.315]. The question then becomes: how have the modifications made to the facade design affected the social interaction potential of its ground floor and sidewalks? The paper conducts a diachronic analysis between the original and current states of the buildings – to understand the adaptations and changes they have undergone. The research utilizes the six parameters suggested by Hassan et al. [7] to understand the aspects that have changed over time and their effects on the street-level social interaction potential of the El Korba area.

II. LITERATURE REVIEW

A. Description of the Original Heliopolis Design

As Dobrowolski stated, "One thing that remains certain: the original Heliopolis was, and still is, a very powerful architectural statement" [8, p.73]. Going from Cairo to Heliopolis, the train passes first through the entertainment area, the hippodrome, the Luna Park, the cinemas, and the shopping area, and then it will reach the more residential parts [1, p.11]. As Fig. 2 shows, everything in Heliopolis was planned and regulated. This includes the height of the buildings, the number of floors, the percentage of built area, and the width of the roads, which even in the 60's considered the traffic [1, p.14]. Egyptian and European specialists also helped give Heliopolis its strength and originality [1, p.17]. The designers also considered the effect of the climate. Because Heliopolis was built before air-conditioners, loggias and arcades were placed in a way to protect from the sun [1, p.19]. One researcher, Elokda, also confirms that the communities and neighborhoods designed in the 1900's were designed for better walkability and to provide for a more active street life [8, p.41].

Fig. 2 Baghdad Street 1930's [1, p.20].

B. Description of the Current Heliopolis

The changes that were made during the Infitah era were most manifested on the facade designs of buildings [1, p.56]. During Sadat's era and the Infitah period, some other transformations were also noticed such as discontinuity in the architectural language of elements on the same facade. Examples are the implementation of AC units, the addition of many advertisements, signs, ornaments, and diverse materials [1, pp.56, 57], and this can be seen from Fig. 3. Unfortunately, shops also started to be treated as independent units and did not respect the local identity of the place. This was in the sense that stores and shops started to adapt colors and materials unrelated to the original facades or the 'local identity'.

It is already known that the indoor activities on the ground floor in El Korba buildings contribute to the occurrence of social activities in the outdoor spaces. They do so by stating that some indoor activities may take advantage of the extension outwards into the adjacent public space. They also agree that it is a negative sign that nowadays people no longer sit or watch activities happening in the main public spaces, arguing that this affects the usage of the spaces as public spaces, which is their original function in the 20th-century design [9, p.839]. Some researchers, however, concluded against having mixed-use ground floors, as their extensions to the sidewalk create difficulty in parking and traffic problems on the street [10, p.153].

In a study published in 2010, people were asked to list the public spaces they enjoy being in the most. The El Korba area was among the first places listed [11, p.56]. Another study has confirmed this by showing that the locations of commercial activities were mostly concentrated near or in the buildings of the original design of Heliopolis [12]. According to their research, this is mainly because they were originally designed to accommodate commercial functions and activities [12, p.72]. On this note, researchers agree that while the El Korba district is still one of the most diverse districts commercially and socially, it is in danger of actual deterioration due to the lack of consideration for the users' needs in a planned and regulated way [12, p.69]. For example, in one study, when people were asked about the district's issues they underscored that pedestrian pavements in the present-day Heliopolis lack or need more attention regarding maintenance [10, p.154].

Another issue that is not being regulated as closely as it used to be in Heliopolis is building heights and changes to facade features. A study has shown that the buildings in El Korba are today higher than those in the original design of Heliopolis [3, p.61]. The study went on to prove that many extensions were made to various buildings in Heliopolis. In Fig. 3, another issue is also made clear, which is the blockage of openings in the facade, a change made among many to the facades of the buildings [1, p.56].

C. Parameters that Impact Staying and Social Activities on Ground Floors

Several researchers have studied the relationship between architecture and activity levels. Hassan et al. [7] extracted parameters that impact the occurrence of what was labelled as 'staying activities'. These are sitting and standing activities such as "socializing, eating, watching, window-shopping, buying and selling, or talking on the phone" [7, p.459].

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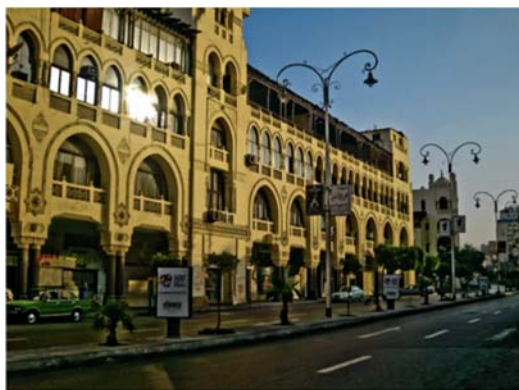Vol:17, No:1, 2023

Fig. 3 Baghdad Street 21st century [2, p.41]

It was found in the research done using these parameters on Baghdad and Ibrahim Streets in El Korba that the parts of the street that were characterized as being highly social were the parts of the street where the below parameters were met, and the parts of the street that were characterized as being less social were when the parameters were lacking or not present altogether. These parameters are:

- *Complexity and architectural character:* "facade articulation, scale and rhythm, and human scale…this includes texture, size, color, facade irregularity [niches, recesses, etc.] and shape" [7, p.459].
- *Permeability:* physical and visual permeability. Physical permeability allows people into and out of the facade threshold; and visual permeability allows people to see the activities happening beyond the facade threshold.
- *Territoriality and personalization:* residents and shopkeepers marking their territory and how that causes a sense of surveillance and, therefore, a sense of security in the area. This can be through personalization where people for example, put "signs, decorative elements, seats, shades and canopies, flower boxes or landscape areas, and fences or shrubs that define territories" [7, p.459].
- *Enclosure:* the degree to which streets and public places are defined visually by buildings, walls, trees, and other elements, as it was put by Voltolini [8]. This enclosure is another factor that creates a sense of security among the users of the area.
- *Building ground-floor use:* ground-floor spaces that overlook the street, and which have a huge role in promoting sidewalk activity. Examples of such spaces can be restaurants, cafes, and stores.
- *Physical comfort:* physical comfort of the user which encourages the user to participate in staying activities on the sidewalk. Physical comfort includes options for seating, like benches, chairs, stools, ledges, short walls, etc. It also includes protection from the weather, like shading from the sun and heat.

D. Gaps in the Literature

Overall, the literature succeeded in describing the original design intention of Heliopolis and the current condition of buildings in the El Korba district from a physical, political, and social standpoint. It still, however, does not provide a diachronic analysis of this design over time, and the deterioration that happened from the original design of these buildings to the current situation regarding the six parameters discussed. It also does not study how these changes could have impacted social interaction in the El Korba district over time.

III. Methodology

In this paper, the main method used to test the hypothesis is the missing diachronic analysis between various sources to test the original design and current condition of El Korba against the six parameters presented above. The research uses diverse sources to conduct this analysis, including photographs, books, anthropological and architectural descriptions, transcribed interviews, books, and base maps. These sources were obtained from the Special Reserves Collection in the Library of The American University in Cairo. Ten historical photographs are used to conduct this comparison over time, all of which are from the Special Reserves in the AUC Library. Ten analogous photographs of present-day El Korba are used, some of which are from sources found in the AUC Library and some taken and annotated by the author.

It is worth noting that the six parameters focus on the architectural features of the design as opposed to the number of people found in pictures so as not to be biased against the older photographs that may not have been as spontaneous as the more recent ones are. Based on the available literature and the site's field observations, these six parameters have been broken down into various components to reach concrete conclusions on the specific factors that contributed to the decrease in social interactions in present-day El Korba. This breakdown is as follows:

- Complexity and architectural character will be studied in terms of ornamentation (types and frequency of occurrence) and shapes (diversity and frequency of occurrence)
- Permeability will be studied in terms of opening types, number, and the existence of depth behind openings or lack thereof
- Territoriality and personalization will be assessed in terms of the interventions made (techniques, diversity of colors, compatibility with the facade, size, and visibility from the street)
- Enclosure will be assessed in terms of distance between buildings, the occurrence of trees, and occurrence of parked cars.
- Ground-floor use will be assessed in terms of the surrounding activities and the functions and frequency of occurrence of the most popular spaces.
- Physical comfort will be assessed in terms of environmental comfort (shading and greenery) and seating options (in terms of diversity, safety, and quality).

These parameters are compared in a case study of the Ibrahim El-Lakkani Boulevard of the El Korba area. An overall indicator is given to each parameter in the case study to assess the occurrence and quality of the parameters. The solid upwards arrow (▲) indicates a general increase or enhancement in the

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parameter, the solid downwards arrow (▼) indicates a general decrease or deterioration of the parameter, and the solid square (■) indicates that the parameter has not changed over the years. Furthermore, two buildings have been specifically used to conduct a more detailed comparison of the six parameters to understand the impact of the changes on the adjacent street life in this area on a more nuanced level. Building 1 is the Heliopolis House Hotel with Groppi's Terrace (Fig. 5) and Building 2 is the Luna Park amusement center (where Roxy Square is today) (Fig. 6).

We also conducted a series of unstructured interviews with several of the store and vendor visitors in the El Korba area, which provided further depth to the findings by providing more understanding of the building changes' effect on the users of El Korba. We selected this unstructured format to allow users to express their views without bias from the research's scope. In addition, previous data, including interview transcriptions, found in other sources were used to confirm the research findings, which are discussed in this paper's results and discussion section

IV. RESULTS

(a)

(b)

Fig. 4 Boulevard Ibrahim El-Lakkani. (a) 1920's [13, p. 58], (b) 2020 (taken by author)

The following is the analysis conducted on the case study of

Ibrahim El-Lakkani Boulevard in the El Korba area. Each parameter will be assessed separately in a general analysis of the Ibrahim El-Lakkani Boulevard from Fig. 4. Then each is explicitly assessed in two selected buildings. This is to acquire a general view of the presence and performance of the parameters in the Boulevard as a whole and a detailed analysis of the specific buildings.

(a)

(b)

Fig. 5 Building 1 (Heliopolis House Hotel)- Boulevard Ibrahim El-Lakkani. (a) 1920's [13, p. 58], (b) 2021 (Courtesy of Sherif Aboul Gadayel)

A. Complexity and Architectural Character

Analysis of Original Design

- *Ornamentations* (*Types)*: Ornamentations are mostly stucco designs on the arcades and around some significant openings.
- *Ornamentations* (*Frequency)*: The occurrence of ornamentation is quite frequent. There are ornamentations between every window, every balcony and the other, and every arch in the arcade and the other.
- *Shapes (Diversity)*: There is great diversity in shapes.
- *Shapes (Frequency)*: There is a high frequency in the occurrence of different shapes
- *Deterioration:* There is no deterioration in the original design as it was then newly executed, and the factors of time and environment have not yet passed on it.

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(a)

(b)

Fig. 6 Building 2 (Luna Park) - Boulevard Ibrahim El-Lakkani. (a) 1930's [13, p. 56], (b) 2006 [13, p.57]

Fig. 7 Boulevard Ibrahim El-Lakkani 1920's [13, p.58] (adapted by author)

Analysis of Current Condition

- *Ornamentations (Types)*: Ornamentations are mostly stucco designs on the arcades and around some significant openings. It is mostly left the same as the original design, with no new additions or removals.
- *Ornamentations* (*Frequency*): The frequency of the occurrence of shapes too has not changed much because the design has been left (in the greater scheme) as it was in the original design

- *Shapes (Diversity)*: There was little or no change in this feature within the parameter.
- *Shapes (Frequency)*: There was little or no change in this feature within the parameter.
- *Deterioration:* There is deterioration due to age and environmental factors.

Overall Comparison

The complexity and architectural character are mostly the same in both cases. The main difference is due to building material wear and tear. Otherwise, the buildings still possess many ornamentations and shapes because the facades were not changed much from their original design.

Overall Indicator ▼

Detailed Analysis of Building 1 (Heliopolis House Hotel)

Much has changed in this specific building over the years. The complexity has increased in this building with the articulation of the different levels through protrusions and recesses in the facade. However, the architectural character has become less defined because of removing the arches on the ground floor. The side tower has been left relatively the same over the years with minimal changes.

Detailed Analysis of Building 2 (Luna Park)

The level of complexity has not changed much for this building over the years. However, the architectural character has. It has decreased due to a few factors; the first is the removal of the front-most tower in Fig. 6 (a); this is a significant change made to the building that alters its character considerably and breaks its balance -especially when considering the other tower on the other side of the building. The second is the replacement of some of the openings with square openings that do not resemble the geometry that was initially in that same place when the tower was still there. Lastly, various components such as the air conditioning units, satellite dish plates and shading elements obstruct the building's architectural character as observed from the facade.

B. Permeability

Analysis of Original Design

- *Openings* (*Types*): Openings are mainly for windows, balconies, or underneath the arcades.
- *Openings* (*Number*): The frequency of openings in each facade leads to many openings observed from the street level. This creates very high permeability.
- *Openings (Depth)*: Depth behind some openings, like balconies and arcades, allowed for there to be privacy for the space inside, while permeability was still achieved.

Analysis of Current Condition

- *Openings* (*Types*): The types of openings have not changed. The majority are still either windows, doors, arcades, or balconies. On that note, however, the number of balconies decreased significantly because users blocked them, so the space no longer functions as a balcony.

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- *Openings* (*Number*): The number of openings also has decreased due to the blocking of various openings.
- *Openings (Depth)*: There are deteriorations in the concept of depth between openings and the actual livable space of a building. The blocking of balconies affected the aspect of different layers and depths to a facade.
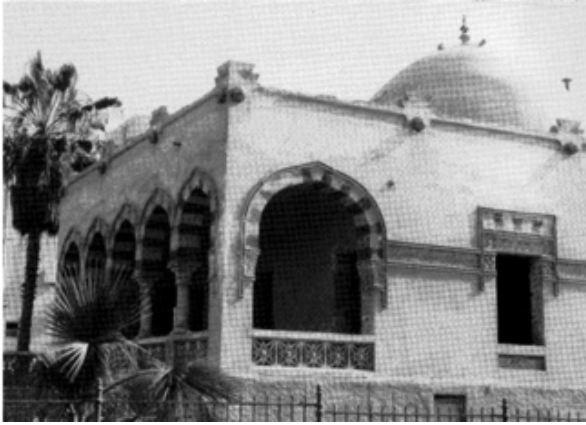

Fig. 8 Facade 19th Century [14, p.2]

Fig. 9 Ibrahim El-Lakkani Boulevard 2020 (taken by author)

Overall Comparison

The permeability in the original case was much more successfully met than it is in the current situation.

Overall Indicator ▼

Detailed Analysis of Building 1 (Heliopolis House Hotel)

The windows have changed in the new form of this building; they now add depth to the facade that was not articulated in the original design. However, the permeability level itself has decreased. The new windows are blocked with *shish* (or wooden shades), making the visual permeability through them impossible. The level of physical permeability on the ground floor also has suffered after removing the arches, which previously made it easy to access the ground floor spaces and interact with them.

Detailed Analysis of Building 2 (Luna Park)

The level of permeability has not changed much in the

building over the years, which is due mainly to the perseverance of the arcade on the ground floor level as well as the frequency of windows in the upper floors.

C. Territoriality and Personalization

Analysis of Original Design

- *Interventions (Techniques)*: Interventions are mainly the addition of shading devices for the pedestrians to find shade under a store, restaurant, or cafe.
- *Interventions (Colors)*: All shades abide by a specific color so as not to ruin the view from the street with clashing colors and designs.
- *Interventions (Compatibility)*: The compatibility of the various interventions, in general, was taken strictly into consideration in the original design of Heliopolis. Therefore, the compatibility of these interventions with the overall design of the facade was nicely met.
- *Interventions (Size)*: The size of interventions (fabric shades) in Fig. 4 (a) is large in comparison with the portion of the facade that pedestrians interact with.
- *Interventions (Visibility)*: Most of the interventions (if there are more than the shades) are not visible from the street level. This is mainly because the stores are protected behind a general arcade, the architectural style of which is designed with the rest of the facade. This creates space and freedom for store owners to make small interventions to personalize their stores without these interventions being visible from the street. This ultimately protects the local identity code of the area while allowing for there to be room for territoriality and personalization.

Analysis of Current Condition

- *Interventions (Techniques)*: The techniques used in this area for creating territoriality and personalization are mainly adding store signs that are expressive of the identity of the store. This entails of course, using very specific colors and materials for each store. Also, some stores extended their shop activity to be happening immediately outside their store.
- *Interventions (Colors)*: Many of the store signs bear different colors that express their different identities.
- *Interventions (Compatibility)*: While these interventions may be successful in attracting users, it does not follow the local identity code.
- *Interventions (Size)*: Because these are store signs, they differ in size; but relative to the facade size on the ground floor where users interact with the building, they are considered large. This makes their impact significant.
- *Interventions (Visibility)*: Many of the interventions made (specifically to the stores) are hidden behind the arcades, as in the original design. This makes the impact of the interventions considerably smaller in this street in relation to others that do not have arcades.

Overall Comparison

While there were interventions made in both the original design and the current situation, and both were of relatively big

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size, the old design rendered better with regards to this parameter because of the strict local identity and the policing of the interventions to make sure they abide by this identity.

Fig. 10 Ibrahim El-Lakkani Boulevard 2020 (taken by author)

Overall Indicator ▼

Detailed Analysis of Building 1 (Heliopolis House Hotel)

The level of territoriality has decreased due to the removal of the arches. Removing the arches deletes the buffer zone left for each store owner near their shops. The level of personalization also has suffered because although the stores may be personalized, this is not visible due to the overwhelming number of advertisements that hinder the view of the building.

Detailed Analysis of Building 2 (Luna Park)

The level of territoriality and personalization has not changed much over the years. The arcade allows the shop owners to personalize their stores without obstructing the overall view of the facade. And the perseverance of this arcade made this benefit possible in today's building form as well.

D.Enclosure

Analysis of Original Design

- *Distance between Buildings*: The distance between buildings is defined by the borders of the buildings and nothing much more than that. There is not much happening in the middle between buildings, mainly because that space is where the tram passed and so there could not be many obstructions there.
- *Trees*: Not many trees are in this part of El Korba as observed from Fig. 4 (a). This could be again because this is where the tram passed and there was no room for trees in the middle of the road. Also, stores and activities adjacent to the facade were protected in other ways, creating very little need for trees there as a shading device.
- *Parked cars*: Back when the original design of the El Korba

was made, there were not yet many vehicles on the street. However, they were accommodated in the design regardless to prepare for a foreseen increase in them. There was not a need for cars to park in front of the facades. They would usually just drop people off and move to a different place to wait.

Analysis of Current Condition

- *Distance between Buildings:* Because this space no longer serves as a railway for the tram that used to pass through it, but rather became a regular street for much smaller vehicles, there became the space for a division in the middle between the two opposite lanes. This creates more chances for the creation of a better sense of enclosure.
- *Trees*: A few planted trees are in in front of various parts of the facade. This enhances the sense of enclosure in front of the buildings.
- *Parked cars:* While parked cars create a physically literal sense of enclosure, they are not sufficient in creating the sense of security that makes enclosure beneficial to the design of a space. Instead, they create a disturbance of activities along the sidewalk and create congestion in the traffic of the area.

Overall Comparison

The quality of enclosure in both the original design and the current situation is quite the same. The only change was removing the tram and adding a few trees by the building's facades. While this may encourage people to linger longer in these spaces for shade, they do not sufficiently affect the sense of enclosure.

Overall Indicator ■

Detailed Analysis of Building 1 (Heliopolis House Hotel)

The removal of the ground floor arches decreases the level of enclosure significantly. The addition of big shading trees and the division of the street adjacent to the building have partially made up for this.

Detailed Analysis of Building 2 (Luna Park)

The enclosure level has not changed significantly over the years. This is due to the perseverance of the arcade which provides a sense of enclosure for the users visiting and interacting with the shops on the ground floor.

E. Ground-Floor Use

Analysis of Original Design

- *Most popular spaces (function)*: The ground floor functions were mostly pastry shops and retail shops, which were popular among the user group at the time and suited their needs and interests.
- *Most popular spaces (frequency)*: The popular shops are quite frequent in this design of El Korba.

Analysis of Current Condition

- *Most popular spaces (function)*: A survey of people in Baghdad Street revealed that retail shops are the most popular spaces on the street. Two ladies even remarked that

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they enjoy shopping in the retail shops in Baghdad Street because they are outdoors and not in a mall, which provides a better experience.

- *Most popular spaces (frequency)*: The frequency of retail shops in Baghdad Street is relatively high. There are many retail shops in this street, varying from clothes to jewelry to bags, shoes, and other accessories.

Overall Comparison

The ground-floor use has been relatively successful in both the original design and the current situation. The popular spaces were frequent in both cases which enhanced the impact of ground-floor use on the social life on sidewalks.

Overall Indicator ■

Detailed Analysis of Building 1 (Heliopolis House Hotel)

The ground floor use has not changed much between both time periods.

Detailed Analysis of Building 2 (Luna Park)

The ground floor use has not changed much between both time periods.

F. Physical Comfort

Analysis of Original Design

- *Environmental (shading)*: It seems from Fig. 4 that shading was well taken care of. The shades that were added in front of the storefronts would make it more comfortable for users to linger under them and interact with them.
- *Environmental (greenery)*: Greenery is not very evident in Ibrahim El-Lakkani Street as observed from Fig. 4 (a).
- *Seating Options (safety):* Seating was well-designed in the original design of Heliopolis and that is evident in Ibrahim El-Lakkani Street where no seating is exposed directly to the street.
- *Seating Options (quality):* The quality of seating also was very good because they were always considered in the design.

Analysis of Current Condition

- *Environmental (shading)*: Shading is well-taken care of in present-day Ibrahim El-Lakkani Street. The arcades provide a good source of shade and the trees planted by some of the facades allow for extra options of shade.
- *Environmental (greenery)*: Besides the few trees planted by some of the facades, there is not much greenery in that street nowadays.
- *Seating Options (safety):* The seating in some places was on the sidewalk directly. While that may be of no problem to users today, it is a downgrade from the original design regarding safety.
- *Seating Options (quality):* The seating in other places in the space between the arcade and the actual building is safer. But again, it is a downgrade from the original design with regards to quality.

Overall Comparison

While Ibrahim El-Lakkani Street in both the original design and the current situation offered various forms of physical comfort, the original design offered it more safely and with better quality.

Overall Indicator ▼

Detailed Analysis of Building 1 (Heliopolis House Hotel)

The physical comfort level near this building has decreased due to the removal of the ground floor arches. These arches previously provided shade for the users interacting with the shops behind them, whereas now this protection is not provided. The only feature that partially accommodates for this loss is the big tree across the road from the building facade.

Detailed Analysis of Building 2 (Luna Park)

Physical comfort levels have not changed much because the arcade is still present and provides shade to the users. Also, between both photos (Figs. 5 and 6), no new plants or shading devices have been added or removed; the shading level seems to be relatively the same.

V. DISCUSSION

In this section, the parameters are discussed individually in more depth to relate the findings with the results from previous studies.

A. Complexity and Architectural Character

Fig. 11 Intersection between Ibrahim El-Lakkani Street and Baghdad Street (taken by author – adapted by the author): Annotations in red point out the signs that hinder the view, Annotations in yellow point out the cars that hinder the view

In the original design, the streets were wide enough so that vehicles did not hinder the view of the buildings' facades. Now, however, the facade cannot be seen clearly due to many obstacles that come in the way. These include an overload of parked cars in one and sometimes two rows by the sidewalk, therefore creating an indirect barrier between the pedestrians and the building facade. Another factor is an overload of advertisements along the middle island between two lanes; it also hinders the view down the street and prevents pedestrians from clearly seeing the building ground-floor shops. These obstacles result in a lowered sense of the area's architectural character, as opposed to in the original design where the

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designers were careful to exhibit the beauty of the buildings in a wide street where no obstacles hinder the view. In areas with arcades, this can be seen nowadays too. The shops are somewhat hidden in the grand scheme, but they are still very accessible to those who want to reach them. However, this was not the case in other building parts, like building corners. And so, when the store owner changed their storefront, the overall building identity was affected as is clear in Fig.12.
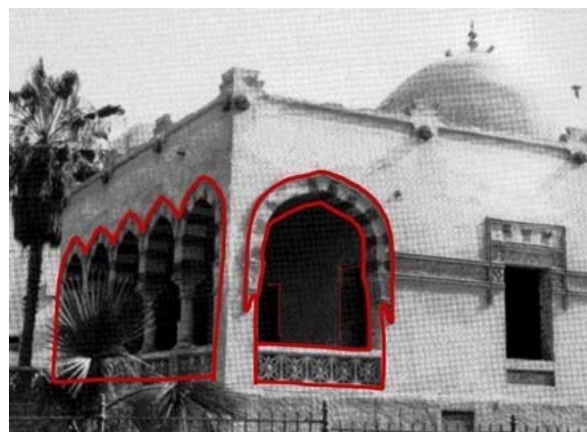

(a)

(b)

Fig. 12 Building in Ibrahim El-Lakkani Street: (a) annotations point out the arcades to mask interventions made behind them in the stores, taken by author – adapted by author; (b) annotations point out a corner shop where the absence of the arcade had a negative impact on the overall architectural character of the building, taken by author – adapted by author
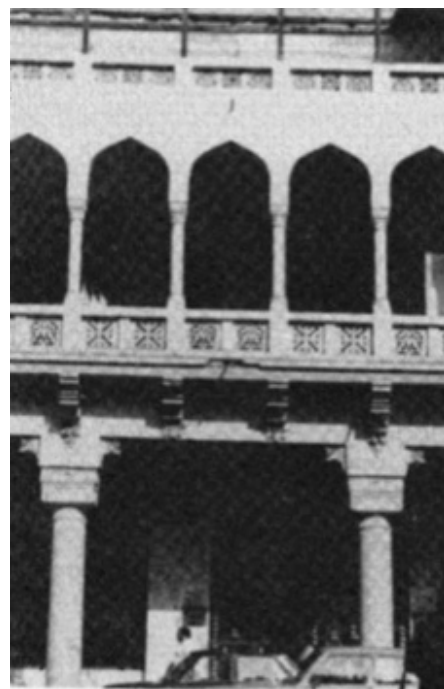
B. Permeability

In the original design of El Korba, a lot of the balconies were left open and made for an outdoor terrace area for the residents and so the level on which the glass was fixed was not noticeable from the street as seen in Fig. 13. This created a much higher sense of permeability without compromising the residents' privacy. As seen in Fig. 14, one would have come really close to these spaces between the indoor spaces and the openings to see the activities happenings in these zones.
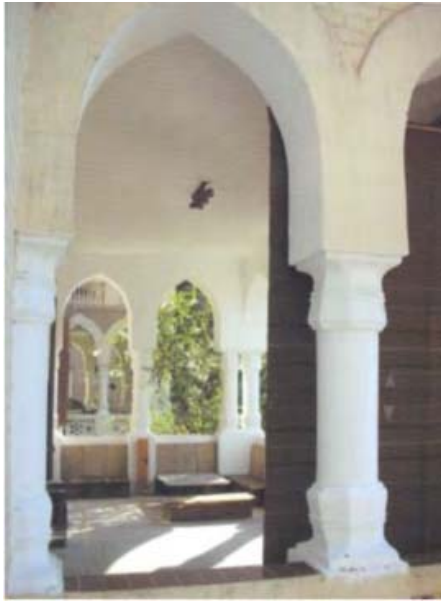

(a)

(b)

Fig. 13 Facades in the 19th Century; (a) [14, p.2], (b) [14, p.1]; annotations point out the ability of the outside openings to create visual permeability by hiding the fixed glass behind them

In areas where total visual permeability could not be met, the original designers added glass panels that were identical across the facade for all units and that abided by the local identity code of the El Korba area. However, in present-day El Korba, many of the buildings' facades have changed, and visual permeability is now blocked in many places where the original design intended for transparency. This can be easily seen when comparing the original and current state of the building in Fig. 15.

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(a)

(b)

Fig. 14 Arcade balconies, late 20th century: (a), (b) [13, p.1]

C. Territoriality and Personalization

The main issues with territoriality and personalization today in El Korba is that they are done in clashing ways. The original design of El Korba was able to accommodate that parameter without hurting the overall character or local identity of El Korba. However, nowadays, the rules and regulations which were discussed in the Literature Review section of this paper are not at all abided by. This undoes the effect of the interventions made to create territoriality and personalization in El Korba today.

(a)

(b)

Fig. 15 Buildings in Ibrahim El-Lakkani Boulevard: (a) 19th century [14, p.1], (b) 2022 (taken by author)

Fig. 16 Baghdad Street arcade, 2021 (taken by author)

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Fig. 17 Heliopolis House Gallery 20th Century [15, p.68]

Fig. 18 Heliopolis House Gallery 20ᵗʰ century [15, p.109]

D. Enclosure

In an interview conducted by Dobrowolski and Dobrowolski [8, p.3] with one of the jewelry shop owners in Heliopolis, Mr. Berge Touloumbadjian noted that his son "appreciates the sense of security and closely-knit network of neighboring businesses" of the Heliopolis he was born in. This proves that even though the original design of Heliopolis was spacious, in the necessary parts, enclosure was implemented to strengthen the sense of security among the shop owners and the pedestrians and passersby.

E. Building Ground-Floor Use

The ground-floor use of buildings has not changed much, the functions on the ground floor are still popular among the current users. Back when Heliopolis was designed for high-income users, the functions were appropriate to their interests. Now the user group of El Korba changed to be more towards the middle and low-income users, and the functions today serve their interests with that respect.

F. Physical Comfort

In the original design, seating was added in well-shaded and well-protected areas which were accessible to whoever needed them. Now however, seating areas are not as well-shaded or protected as can be seen when comparing Figs. 18 and 19.

Fig. 19 Restaurant along el-Ahram Street (taken by author)

VI. RECOMMENDATIONS

The results highlight that deterioration and changes to the complexity and architectural character, permeability, territoriality and personalization, and physical comfort has resulted in significant changes to the social life on the street level. This means that tactical changes could be made to the facades to stop or reverse this deterioration. Some of these changes could tackle each specific parameter on its own, or certain interventions could be studied to tackle more than one parameter at once. The following are examples of possible recommendations for each specific parameter:

- Complexity and architectural character: Instead of demolishing buildings parts, an alternative could be to renovate them. And instead of adding specific components like AC units or Dish plates or extensions, the identity code could be made to be followed more stringently and abided by to avoid the deterioration of the facade's architectural character.
- Permeability: Instead of blocking openings with opaque glass or closing off balconies on the main facade of the buildings, an alternative could be to add certain shading devices that create privacy without blocking the openings completely.
- Territoriality and personalization: Shop owners could start to be more mindful of the interventions they make in their stores. Abiding by the identity code of El Korba when adding personalized components would enhance this parameter without hurting the first parameter (architectural character)
- Physical comfort: adding more seating options in the wide sidewalks would increase the socialization levels on that sidewalk. However, quality of seating and safety must also be taken into consideration.

Another tactic that could be used to halt or reverse the deterioration is studying one aspect/solution that tackles several of the parameters at once. An example of a component that was proven through the research to have an impact on several of the parameter assessments was the presence of arcades. The

presence of arcades that follow the architectural character of this specific area in Heliopolis will enhance the first parameter. With regards to permeability, it provides both physical and visual permeability of the actual facade threshold. And with regards to territoriality and personalization it provides a buffer area between the actual facade and the arcade where shop owners can add some decoration to their shops without creating an issue from the street level. Finally, with regards to physical comfort, it will provide an accessible shaded space for the users to shop, socialize, sit, or simply walk by without being exposed to the sun and hot weather directly.

VII. CONCLUSION

This research studied the changes in the architectural features of Heliopolis through a diachronic analysis of three case studies in El Korba. El Korba has always been known for having a very strong architectural character which helps stimulate a robust social life. It has very strong potential but has been on a path of deterioration. The studies that were found regarding this research topic discuss the El Korba area with regards to history, politics, and social life. Some studies [1], [9], [10], [12] also describe the deterioration. However, little-to-no research could be found, at the time this research was conducted, which studies the impact of this deterioration on the social life in El Korba with regards to the six parameters of facade design which are proven to have impact on social interactions on the sidewalks. These parameters are: complexity and architectural character, permeability, territoriality and personalization, enclosure, ground-floor use, and physical comfort.

In this paper, a diachronic analysis was conducted to study the impact of the changes done to the facades over the years on the social life in the adjacent streets and sidewalks. A case study in Ibrahim El-Lakkani Boulevard from El Korba was examined and assessed against these six parameters to track their increase, decrease, or stability. This was done using descriptive analysis and overall indicators that are used to compare each case study with regards to the six parameters; and, to compare each parameter across the case studies to pinpoint the parameters that are causing this deterioration in the social life on the streets and sidewalks.

The results showed that the parameters that have decreased enough over the years to cause deterioration are the following: complexity and architectural character, permeability, territoriality and personalization, and physical comfort. Therefore, if changes are to be made to stop this deterioration, it can be done by either tackling each one of the four parameters individually; or by choosing to start with one tactical intervention that can positively impact several of these parameters at once.

REFERENCES

[1] Mahy Mourad Nowier. (2014, July). Urban Space and Politics of Transition in Contemporary Cairo. Oxbridge Essays.
[2] Elmenshawy, D. A. N., Eldaidamony, E. M., & Ghaly, E. M. (2016). Introducing a New Methodology to Reduce Urban Noise Pollution, Case Study of El Korba District, Masr Elgideda, 1–12.
[3] Ilbert, R. (1981). Heliopolis: Le Caire 1905–1922 Genese d'une Ville. Centre National de la Recherche Scientifique.
[4] Jacobs, J. (1992). The Death and Life of Great American Cities (Reissue ed.) Vintage.
[5] Gehl, J., & Rogers, L. R. (2010). Cities for People (Illustrated ed.). Island Press.
[6] Lefebvre, H. (1991). The production of space. Blackwell.
[7] Hassan, D. M., Moustafa, Y. M., & El-Fiki, S. M. (2019). Ground-floor façade design and staying activity patterns on the sidewalk: A case study in the El Korba area of Heliopolis, Cairo, Egypt. Ain Shams Engineering Journal, 10(3), 453–461.
[8] Dobrowolski, J. (2020). Heliopolis: Rebirth of the City of the Sun by Jaroslaw Dobrowolski (2006-11-01). The American University in Cairo Press (2006-11-01).
[9] Elokda, H. (2015, August). Evaluating the Effect of Urban Design on Three Components of Happiness in Cairo, Egypt.
[10] Elshater, A. (2012). New Urbanism Principles versus Urban Design Dimensions towards Behavior Performance Efficiency in Egyptian Neighbourhood Unit. Procedia - Social and Behavioral Sciences, 68, 826–843.
[11] Bassioni, G., Kebe, C. M. F., Gueye, A., & Ndiaye, A. (2019). Innovations and Interdisciplinary Solutions for Underserved Areas: Third EAI International Conference, InterSol 2019, Cairo, Egypt, February 14–15, ... and Telecommunications Engineering (296)) (1st ed. 2019 ed.). Springer.
[12] Nassif, C. K. (2010, May). I aspire to walk": Egyptian working women defining threats on Cairo's public space.
[13] Eldaidamony, M. (2020b). Applying the Gentrification Indicators in Heliopolis District. In A. A. A. Shetawy, Y. Serag, & A. Elshater (Eds.), Conservation of Architectural Heritage A Culmination of Selected Research Papers from the Second International Conference on Conservation of Architectural Heritage (CAH-2), Egypt 2018 (pp. 65–76). Springer Publishing.
[14] Mémoires Héliopolitaines. (2005). The French Centre for Culture and Cooperation.
[15] Raymond, A., & Wood, W. (2002). Cairo. Harvard University Press.