I. INTRODUCTION

Egypt has a large number of historic sites which reflect its unique culture throughout the ages. The successive authorities and responsible institutions have made huge attempts since the nineteenth century to preserve this heritage, to keep it always as a source of national pride and an embodiment of the accumulated efforts of past generations that could be exploited for various touristic and cultural purposes. However, one of the most difficult challenges that still threaten some of these historic sites is the uncontrolled urban extension that has increased around them over the years. Lack of sufficient restrictions and decisive actions against these illegal activities resulted in deterioration of the urban character of the contexts surrounding those sites which could violate their distinguished values. This paper focuses on discussing how to find the appropriate solution for this problem in one of the most notable historic sites in Egypt, the Sphinxes Avenue that connects Karnak and Luxor temples in Luxor city. For the purpose of this research the term “Urban and visual Character” is used to describe the summation of external visual features that are prevalent among the groups of existing buildings and spaces located in a particular area, whether it is considered convenient or not [6].

II. PROBLEM OF RESEARCH

Although the Egyptian government has recently attempted to apply several intervention strategies to confront the problem of unplanned urban sprawl around historic sites, such as the total clearance of such informal settlements or the comprehensive upgrading of them, these strategies, in turn, face...
many difficulties and challenges in their implementation that make them inappropriate in many cases. For example, the strategy of total clearance, which was applied to many informal districts in Luxor, requires paying high compensation fees to the residents, and this may not be always available, especially when applied on a large scale. It also necessitates the moving of inhabitants to other places, which may result in other economic, social or political problems. On the other hand, the strategy of comprehensive upgrading, which was adopted by the Decent Life Initiative since 2019, also requires huge costs and may take a long time to totally achieve its goals.

For these reasons, it is important to have another approach to deal with this problem to upgrade the degraded visual character of the urban contexts surrounding historic sites without requiring such radical changes or high costs. In other words, another approach is required that could offer an urgent solution to the phenomenon of incompatible urban context until the conditions become more favorable for deeper and more comprehensive solutions. This study is concerned with seeking how to achieve this goal in the case of the Avenue of Sphinxes, which was an ancient ceremonial path connecting Karnak and Luxor temples. The Egyptian government, as a part of a great revival project of the site, carried out a massive demolition of hundreds of buildings which had been built above it over the years. After uncovering the area, a new long and wide urban space has resulted, bordered by inhomogeneous buildings which were not so visible before. These buildings became the visual background of this unique path, and it is not possible at the present time to remove all of them because of their huge number. Therefore, it was necessary to find another solution to improve the visual character of the building façades adjacent to the avenue to become more compatible with it, especially before its official opening in an international celebration on 25 November 2021.

III. AIM OF RESEARCH

This research aims at formulating a framework for upgrading the inappropriate visual character of urban backgrounds of historic sites in Egypt and applying it to the case of the Avenue of Sphinxes in Luxor as a part of the several measures taken by the Egyptian government to revitalize the site for touristic and cultural purposes. An appraisal of the results after the implementation was performed to check the applicability and efficiency of the proposed framework.

IV. METHODOLOGY

This research adopts the deductive approach, by reviewing the recommendations of international charters and urban regulations related to the subject as well as previous studies to extract general principles and procedures that could be applied to the deteriorated urban contexts of historic places, especially in the case of the Avenue of Sphinxes at Luxor, in order to upgrade the poor visual character of such areas.

V. THEORETICAL BACKGROUND

A. Principles and Rules for New Constructions within Contexts of Historic Sites:

The issue of construction within the surroundings of historic sites has attracted the attention of international organizations related to heritage conservation, such as UNESCO which emphasized in its 19th General Conference [23] that the character of historic areas is threatened by the new urban developments around them. Therefore, these outstanding places should be actively protected against the negative effects resulting from insensitive additions and misguided changes. The conference recommended that architects and planners should be careful to ensure that historic areas are not spoilt due to modern construction activities, and that they should be integrated harmoniously into contemporary life. Similarly, Burra Charter issued by Australia ICOMOS [9] states that conservation of historic sites requires the retention of an appropriate setting and any new construction, demolition, or intrusions which would adversely affect the setting are not appropriate. According to these principles, clear boundary areas and buffer zones are designated around historic sites in different countries to restrict construction activities and keep these places safe from any encroachments.

Similar regulations and guidelines are usually issued by concerned authorities to indicate the characteristics of new buildings that are allowed to be constructed within heritage districts or beside listed buildings inside cities, such as the guidelines of English Heritage / CABE in UK [12] and the guidelines of Preservation Alliance for Greater Philadelphia in USA [19]. Most of these guidelines are influenced by the works of some important scholars such as Worskett, R. (1969) who suggested that urban conservation requires two strands of activity; the first aims at identifying the features of historic buildings to establish principles governing their preservation, and the second aims at assessing the townscape qualities of the whole area to establish a 'visual discipline' for the design of changes to the urban environment. Visual discipline means the general rules needed to control the character of urban areas and ensure their visual continuity on the level of character-defining features such as: building lines, heights, skylines, widths, colors, textures, void-to-solid ratio and details [24].

Similarly, Brolin, B. (1980) indicated in his book about architecture in context some basic visual attributes that could achieve the visual continuity and compatibility between new and old buildings. He divided them into two categories: the first includes general attributes such as setbacks, massing, scale, heights, proportions, shapes, materials, colors, and openings; and the second includes detailed attributes such as characteristics of ornaments and decorations. On the same line, Oc, Heath and Tiesdell [18] emphasized that new developments should respect both spatial and visual characters of their historic contexts. Respecting spatial character means achieving harmonious relation with the existing spaces on the level of siting, massing, heights, street patterns and space enclosure, while respecting visual character focuses more on achieving harmony on the level of façade features [8].
On the other hand, Semes, S. (2007) proposed four strategies for the design of new buildings inside heritage districts. They extend from total harmony with context to total differentiation with it, and each strategy is suitable for certain cases. The first strategy is called “Literal Replication”, which aims at sustaining the character of the historic setting by borrowing directly from its features in the new building to achieve the highest degree of harmony. The second strategy is called “Invention within a Style”, which doesn’t literally replicate the features of heritage buildings, but rather adds other elements in a closely related style to achieve a degree of differentiation for the new building while maintaining its compatibility with the context. The third strategy is called "Abstract Reference", which aims at simplifying the details and decorations of historic styles in the new building while keeping their general aspects, such as outlines, scales, proportions and divisions. The fourth strategy is called the "Intentional Opposition", which aims at achieving a clear differentiation between the new building and its context by using a contrasting style, provided that it should respect the main aspects of the surrounding buildings, such as heights, sizes and prevalent rhythms.

The second and third strategies are recommended by the guidelines of English Heritage / CABE and Preservation Alliance because they ensure a degree of balance between harmony and differentiation or integration between past and present. On the contrary, the last strategy is considered the most critical one, because it could interrupt the visual continuity of the context and spoil the sense of its old character. However, it has its supporters who believe that new buildings should express the spirit of modern era and be distinguishable from the heritage buildings to avoid confusion or monotony resulting from similarity between new and old.

Al-Sherbiny, M. (2020) developed Semes’ classification by adding more design strategies extracted from his analytical study of various architectural examples from different contexts. One of the important strategies is “Humility and Humbleness towards a Historic Landmark”, in which the new building is extremely simplified, diminished or even hidden underground to show the maximum respect for the important historic landmark in front of it. Another important strategy is “Appearing as a background for a historic building” in which the façades of the new buildings are simplified and abstracted to appear as a simple, flat and neutral background in a way that contrasts with the heritage building and accentuate its unique features. The third strategy is “Orientation towards a historic landmark” in which the masses or façades of the new building is turned, twisted or rotated to face the historic landmark in a way that emphasizes its importance.

B. Deterioration of Urban Contexts of Historic Sites in Egypt:

The Antiquities Protection Law No. 117 of 1983 in Egypt and its amendments approved by Law No. 3 of 2010 and Law No. 91 of 2018 asserted on the restriction of construction activities inside the buffer zones and beautifying lines assigned by the competent authorities around historic sites. Building in such areas is not licensed except in accordance with special terms. Additionally, the Minister of Antiquities Decree No. 90 of 2016 regarding height restrictions in Historic places stipulated that the height of the new buildings in Islamic Cairo should not exceed the adjacent historic buildings, without calculating the heights of their minarets, domes, parapets, crenellations or any other similar elements. Also, the National Organization for Urban Harmony has issued a number of regulations and guidelines for new buildings erected inside heritage districts, such as Khedivial Cairo, Heliopolis, Garden City and Alexandria. These guidelines specify the locations, functions, heights and features that ensure harmony between new and old buildings.

Despite all these restrictions, several informal areas have expanded tremendously around some historic sites in Egypt, exposing their visual character and historical value to the risk of distortion and encroachment. One of the most prominent sites exposed to this danger is Giza pyramid complex, which is threatened by the overgrowth of unplanned area of Nazlet Al-Samman, of which urban and social conditions are not convenient with the importance of this site. Likewise, Edfu temple in Aswan, Habu and Esna temples in Luxor suffer from similar situations, in addition to the hundreds of buildings that were constructed all over the years in heritage districts of Cairo without showing any respect to their outstanding values.

The reasons for this phenomenon are due to many complicated factors, the most important of which are the economic, political and social crises that Egypt had experienced in the past eras, which led to delays or slowdowns in the establishment of residential areas sufficient for the needs of the increasing number of residents. As a result, some groups of people decided to build their homes illegally on any vacant or cultivatable lands near their birthplaces or workplaces, without waiting for official solutions or paying any attention to the value of agricultural lands or historic sites. The lack of sufficient regulations or serious actions against encroachments during some past eras led to the exacerbation of this phenomenon, especially during the chaotic period which followed the protests of January 2011.

Recently, the relevant authorities in Egypt have become more aware of the danger of this phenomenon and have been trying to overcome it by applying more decisive solutions such as clearance and replacement of informal areas or comprehensive upgrading of them. For example, a massive campaign was launched in Luxor city in the last years to remove the unplanned areas that distort the visual character of some of its historic sites, such as Luxor, Karnak, Esna temples. However, there are still many historic sites that suffer from their deteriorated contexts and clearance strategy is not always applicable or suitable. Thus, other approaches are needed to contribute to the solution of this problem, such as upgrading the degraded visual character of existing building façades, which could be considered an important stage in any comprehensive upgrading plans of these areas.

C. General Framework for Upgrading the Degraded Character of Urban Context of Historic Sites:

The deteriorated character of the urban contexts of some historic sites in Egypt imposes the necessity of intervention to
upgrade them in a manner that respects the value of these sites and contributes to improving their visual image. According to the management of conservation areas in the UK, these contexts can be enhanced by applying the following steps [10]:

- Appraisal of the character of the historic place to detect the features that make the area special.
- Preparing special Development Briefs for the aspects that are detracting from the character.
- Ensuring that new buildings harmonize with or complement their neighbors.
- Making improvements on the levels of paving, landscaping, signs and similar elements.

These general recommendations could be considered the most suitable approach to upgrade the inappropriate visual character of unplanned urban districts in Egypt, because it could improve the deteriorated appearance of existing buildings without the need to totally demolish them. Thus, according to these steps as well as the rules discussed above, a general framework can be derived to indicate the procedure required for upgrading the degraded character of such areas. It consists of four main phases and four influencing factors as illustrated in Fig. 1:

- **The first phase:** The aim of this phase is to investigate and analyze the visual character of the urban context of the historic site to extract its prevalent visual features and indicate the visual problems and defects that detract from its homogeneity and compatibility with the monument.

- **The second phase:** The objective of this phase is to suggest the appropriate solutions and strategies of intervention that could be used to get rid of these defects and upgrade the visual character of the place. This could be carried out by modifying, replacing and improving its inconsistent visual features to achieve harmony between incompatible façades at the level of heights, colors, materials, horizontal and vertical divisions, openings, setbacks, projections and recesses as well as landscape elements. It is recommended to choose the type of alterations that respect the uniqueness of the monument and, at the same time, show humbleness towards it by simplifying the visual features of the context to avoid drawing attention from the monument or competing visually with it. Moreover, a degree of differentiation between the urban background and the historic site is needed to avoid causing any confusion that could detract from its distinctiveness due to its close similarity with the adjacent buildings. Furthermore, adding a sense of variety in the features of the context could help to avoid the monotony that may result from the excessive repetition of the same features throughout all façades.

- **The third phase:** After suggestion and discussion of intervention strategies that should be applied to the context, the essential drawings & documents should be prepared and introduced to the competent authorities and also to the people living or working within the context of the monument to get their approval. This may require several negotiations to convince the concerned parties of the importance and benefits of these suggestions as well as the expected consequences of the intended measures. After obtaining the necessary approvals, execution should be carried out according to the announced plans.

- **The fourth phase:** The aim of this phase is to assess the character of the visual context after its upgrading to evaluate the applicability and efficiency of the applied strategies in achieving the intended objectives. This appraisal helps to identify the deficiencies and shortcomings that need to be rectified in the future or taken into consideration in other development plans.

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Fig. 1. The proposed framework for upgrading the visual character of building façades adjacent to historic sites (The Authors)
The extent to which this framework can be applied is determined by several factors, the most important of which is: the value and characteristics of the historic site, the level of degradation of its urban context, the financial and technical capabilities available for implementation, the economic, social and cultural aspects of the people residing in the area as well as their degree of acceptance for such interventions. These factors are illustrated in Fig. 1 in addition to the basic visual features of the urban context and the measures of the four main phases that should be applied to upgrade the degraded character of the area. This framework could be reapplied again if needed to ensure the continuous protection of the visual character from any further deterioration in the future.

VI. The case of the Avenue of Sphinxes in Luxor

The following sections explain how the proposed framework was actually applied to the case of the Avenue of Sphinxes in Luxor. This was a real project launched in June 2021 as a part of a larger project that intends to revitalize the avenue after removing all the buildings that were standing above it and excavating the site to uncover its buried treasures. Many of these buildings were built informally over decades without any prior planning or follow-up from the authorities and even before the designation of the conservation buffer zone which currently surrounds the entire area from Karnak temple in the north to Luxor temple in the south and from River Nile in the west to Salah Salem road in the east. A work plan was drawn up according to the proposed framework, starting with a study of the value and characteristics of the avenue, then an analysis of the urban character of the façades and spaces adjacent to the avenue to detect its visual problems, then suggesting the intervention strategies needed to upgrade the character, and finally the implementation of these strategies and appraisal of their efficiency.

A. The Value and Characteristics of the Avenue of Sphinxes

The Avenue of Sphinxes is a 2.7 km long path that connects Karnak and Luxor temples. It was used in ancient Egypt as a path for religious ceremonies, especially during the Opet Festival, which was celebrated annually during the flood season. In this festival the cult statues of Amun-Re, his consort Mut and their son Khonsu were placed inside sacred barques and carried across the Avenue of Sphinxes from Karnak temple to Luxor temple as a part of a great procession in which the Pharaoh, priests, nobles, high officials, musicians, dancers and flag bearers participated (Fig. 2). After arriving at Luxor temple, a ritual marriage between Amun-Re and the Pharaoh took place, to ensure the Pharaoh’s fertility and to emphasize his role as the mediator between gods and people. The Pharaoh was spiritually reborn through a re-crowning ceremony to legitimize his divine right to rule. After the celebrations, the statues were returned back to Karnak temple across the avenue in a similar procession [13], [14].

The beginning of this path dates back to the era of Queen Hatshepsut of the 18th dynasty, who recorded on her red chapel in Karnak Temple that she constructed six chapels dedicated to the god Amun-Re along this pathway as resting places for the sacred barques. Next, Amenhotep III was the first king to establish a paved road lined with sphinx statues between the 10th pylon of Karnak Temple and the precinct of Mut Temple at the south and another road in front of Khonsu temple at the southwest [15]. Both roads were decorated with sphinx statues on both sides consisting of lion bodies and ram heads symbolizing Amun-Re (Fig. 3). Several developments were made until the era of King Nectanebo I of the 30th dynasty who extended the avenue to Luxor Temple and decorated it with sphinx statues having human heads (Fig. 4). He also built protection walls and planted trees and flowers [1].

Excavations of the site were begun in 1949 by the Egyptian archaeologist Zakaria Ghoneim, as most parts of the avenue were covered by sand, agricultural lands and buildings. The excavations were continued in 1958 until 1964 by two other archaeologists, Mohamed Abdul-Qader and Mahmoud Abdul-Razek, who uncovered dozens of buried statues and circular red-brick pits between them connected by irrigation channels for the trees and flowers, in addition to the remains of stone slabs used for paving [2]. Similarly, the archaeologist Muhammad Al-Saghir discovered other remains of the avenue between 1984 and 1991 [11]. In 2005, the excavations were continued again by the archaeological Mansour Boraik, who found that the avenue was not only connecting the pylons of Luxor Temple and Khonsu Temple in Karnak, as was believed before, but it splits at its northern end into two paths, one leads to Khonsu Temple and the other extends from the west to the east until it ends at the Temple of Mut, then turning to the north until it reaches the 10th pylon of Karnak Temple [7].

The former governor of Luxor, Major General Samir Farag was the first to activate the idea of uncovering the whole avenue to convert it into an open museum, when he succeeded in passing an official decree in 2005 to remove all the buildings that were standing above the avenue and moving the residents to other places after compensating them [31]. However, due to the political and civil unrest after the protests of 2011 the project was halted until it continued again in 2018 by President Abdul-Fattah al-Sisi. Hundreds of buildings including mosques and a church were removed to the width of 76 meters. After the demolition, a lot of historic remains have been discovered, bringing the total number of the statues to more than 1200 sphinxes [29], some of which are complete, others are broken, and many have only the bases (Figs. 5, 6).

Fig. 2. Carrying the sacred barque in Opet Festival [22]
Fig. 3. Remains of ram-headed sphinxes (Photo credit: Authors)
Fig. 4. Human-headed sphinxes of Luxor Temple [17]
Fig. 5. Bases of some discovered statues (Photo credit: Author)
B. The First Phase: Visual Analysis of the Collective Façades Adjacent to the Avenue of Sphinxes:

The demolition of the buildings that covered the avenue has created a linear urban space of length 2.7 km and width 76 m flanked by rows of incompatible buildings. Its ground level is lower than the surrounding area by a few meters due to excavation works. Therefore, two retaining walls were built on both sides and covered by mud bricks similar to the bricks used by ancient Egyptians. Two bridges were constructed across the avenue as a necessary solution to connect its two sides so that its trench-like depression would not cut off the connection between the eastern and western parts of the city. These two bridges are constructed along two main roads that originally existed before demolition: "Al-Matar" road to the north and "Al-Mat’han" road to the south.

Most of the buildings that currently flank the avenue were not so visible before the demolition, as they were overlooking inner alleys and minor streets of back districts and became suddenly the visual background of this unique avenue after removing all the buildings that were standing above it; and many of these buildings suffered from different degrees of deterioration and inhomogeneity. In addition, the huge buildings that were partially interfering with the avenue were partially demolished, by removing only the parts that blocked the path in order to reduce the costs. This resulted in several incomplete structures along the avenue. For these reasons, the responsible authorities saw the necessity for urgent intervention to upgrade the inappropriate visual character of those buildings without any further demolitions, as a primary stage until more comprehensive measures are taken to develop the whole area on deeper levels in the future.

Accordingly, a visual analysis of the building façades adjacent to the avenue is needed to determine their detracting features and develop the appropriate scenarios to modify or alter them in order to upgrade their character. To perform this analysis the avenue was divided by the two bridges into three sections including eight sides on the eastern and western flanks of the avenue as illustrated in (Fig. 7). Several field tours were conducted in June 2021 to investigate and survey the urban and visual characteristics of each section, as follows:

- **Section “A”**: This section is located at the northern part of the avenue between Karnak Temple and "Al-Matar" bridge. It was divided into four sides: The first side "A1" starts from the entrance gate of the parking area of Karnak temple and extends parallel to its front plaza as well as the Sphinxes Alley leading to the first pylon of the temple. This alley is different from the Sphinxes Avenue connecting Karnak and Luxor temples, as it extends towards the Nile River and its ram-headed statues are in a good condition. The second side "A2" is located on the west and starts from the gate of Khonsu Temple at the southwestern corner of Karnak Temple and ends at "Al-Matar" bridge. The statues in front of Khonsu Temple were ram-headed but they lost most of their heads (Fig. 3). At the middle of this section the avenue branches into two directions: one extends to the east towards Mut Temple and the other continues to the south. The statues of this part are human-headed and many of them have only the bases. The third side "A3" is separated from the fourth side "A4" by the branch of the avenue that leads to Mut Temple. Except for side "A4" which was totally demolished, the urban character of this section in general was considered deteriorated, due to the inhomogeneous, dissonant and modest appearance of buildings. Most of these buildings were informal with unfinished façades and varying heights. Some of them were found dilapidated, partially demolished or incomplete (Figs. 8a to 8c).
Section "B": This section is located in the middle of the avenue between "Al-Matar" bridge to the north and "Al-Mat'han" bridge to the south. The buildings of its two sides are newer and more regular compared to section "A". They have similar heights (about four stories on average) but forms, colors and materials of their façades were found dissimilar (Figs. 9a and 9b).

Section "C": This section is located at the southern part of the avenue. It starts from "Al-Mat’han" bridge to the front plaza of Luxor Temple. During the field tours, it was detected that the urban character of its two sides was varied. Some parts had modest buildings with unfinished exteriors (Figs. 10a), while other parts had newer buildings but with varying colors, heights and finishing materials (Fig. 10b). The most prominent building in this section is the Church of St. Mary (Fig. 10c) which is characterized by its domes and towers. Although it was partially overlapping with the avenue, it was not demolished because it is considered a building of architectural value. Only the adjacent informal buildings were removed.

In the light of the foregoing, the most noticed problems in the visual character of the building façades adjacent to the avenue can be summarized as follows:

- Decayed and incomplete parts: Several decayed and partially demolished buildings were noticed during the field tours, especially in section "A" and to a lesser extent in section "C". Some informal buildings were incomplete, as the walls of their upper floors were not built and only the columns were visible. Also, the walls and parapets of some other buildings were irregular.

- Finishes and colors: Many unfinished façades were detected along the sides of section “A” and “C”. Some local people, to reduce construction costs, used to build their informal houses out of bricks and reinforced concrete without paying any attention to exterior finishes. As a result, the visual character of these buildings was characterized by the rough texture and dark red color of unfinished brick walls combined with the dusty surface and gray color of concrete frames. On the contrary, the buildings of section “B” have better exterior finishes, but a lack of harmony was detected in their colors and materials.

- Heights: An obvious inconsistency in building heights was observed in section “A” and “C”, which led to the irregularity of their skylines. Conversely, the buildings of section “B” are similar in their heights and have more regular skylines. However, the floor heights are varied, causing mismatching in the rhythm of horizontal divisions.
• **Widths:** A noticeable difference in the widths of buildings and structural bays was found, especially in section “A” and “C”, causing another irregularity in the rhythm of vertical divisions.

• **Openings:** A lack of harmony was observed on the level of openings, especially in section “A” and “C”, resulting from the dissimilarity of shapes, sizes and distribution of windows and doors among the collective façades.

• **Building lines and setbacks:** The noticeable difference in the relationships between buildings and streets in section “A” and “C” led to the irregularity of recesses and projections of façades and the nonuniformity of building lines. On the contrary, buildings of section “B” have more regular setbacks which led to more uniform building lines.

• **Architectural elements and details:** A clear mismatch between adjacent buildings was detected on the level of architectural elements and details. The informal buildings of section “A” and “C” were characterized by their plain and modest façades which lack any remarkable details, while the newer buildings of section “B” and “C” are considered better. However, the use of different styles and details in these buildings led to the inhomogeneity of collective façades. Moreover, the random disposition of air conditioning units, satellite dishes and advertisements along the façades increased the degree of visual pollution.

• **Landscape of adjacent spaces:** Most of the streets and spaces which separate the buildings from the avenue were unpaved and without sufficient lampposts or seats. Also, trees and palms are few and unevenly distributed.

### C. The Second Phase: Suggestion of Intervention Strategies to Upgrade the Inappropriate Character:

It was clear from the beginning that the extent of intervention is restricted by the limits of available budget and capabilities as well as the degree of complexity of visual problems that need to be overcome. Moreover, the skeptical and resistant attitude of the community increases the difficulties, as people usually feel threatened in such cases and don’t easily accept these interventions from the official authorities. Therefore, the main objective of responsible authorities was to remove - or at least reduce - the visual problems and defects that cause inhomogeneity of the character and, on the other hand, increase the degree of harmony and consistency - as possible - through the careful modification and alteration of inappropriate features within the limits of available capabilities. This approach, if succeeded, could encourage people and concerned parties to participate in more comprehensive development plans in the future.

The high degree of visual exposure of building façades overlooking the avenue required intervention on different consecutive levels, starting with the level of façades that are directly adjacent to the avenue, then the other façade levels of back buildings that could be partially seen from the avenue due to their heights. Also, different degrees of intervention are needed in each section according to the difficulty level of its problems. The most difficult problems were found in section “A” then section “C” and “B”. Therefore, the highest degree of intervention is required in section “A” then “C” and “B”.

Based on the foregoing, representative cases of degraded façades were selected along the path, in order to apply the strategies of the proposed framework to them to upgrade their visual character. Several proposals were prepared to redesign these façades and suggest solutions for their visual problems. After discussion and approval of them, these proposals should be generalized in execution phase to other groups of buildings that suffer from similar problems. The following points explain the strategies upon which these proposals were based:

- **Decayed and incomplete parts:** Upgrading the visual character of façades requires the removal of dilapidated walls and remaining debris left over after demolition works, then building incomplete parts of walls and parapets as well as repairing the irregular walls to make their surfaces more straight with perpendicular edges and corners, either by changing the thickness of plaster layers or by rebuilding them again if necessary. Proposals were prepared to apply the suggested solutions to some representative cases of deteriorated façades (Figs. 11a, 11b, 12a, 12b, 13a and 13b). Also, removing the inappropriate metal shade covering the entrance gate of the parking area of Karnak Temple and preparing a new design for this gate could enhance the overall image of this important spot (Fig. 14a and b).

- **Finishes and colors:** Plastering and painting of unfinished façades is a necessary measure to replace the unpleasant appearance of visible bricks and concrete. Moreover, unifying colors of inhomogeneous exteriors could achieve harmony between them and ensures the simplicity of collective façades. After several discussions with the responsible authorities, it was decided to choose the light yellowish beige color for façade finishes because it matches with the color of stones used in ancient Egyptian temples and statues and at the same time it achieves a degree of differentiation from them because of its lighter tone (Figs. 11b, 12b and 13b).

![Fig. 11a and b. A proposal to upgrade the visual character of decayed façades by completing, straighting, plastering and painting of unfinished walls. (Authors)](Image)
- **Heights**: It is difficult to unify the heights of all buildings due to structural, economic or social reasons. Therefore, adjusting the rhythm of change in heights to make the skyline more regular could be enough. To achieve this, it is necessary to raise the heights of parapets in some buildings using light weight bricks and constructing new walls between the columns of incomplete upper floors in some other buildings (Fig. 15a and 15b). Adding horizontal stripes in the finishing of façades could improve the rhythm of horizontal divisions (Figs. 11b, 12b & 13b).

- **Widths**: Adjusting the rhythm of building widths or façade bays requires demolishing and rebuilding them again, which is not acceptable. Instead, straightening irregular surfaces and uneven edges of poorly built walls by adjusting plaster thickness could reduce the feeling of disharmony and dissonance (Figs. 11a, 11b, 12a and 12b). Besides, adding openings at equal distances in the parapets of buildings could contribute to improving the rhythm of vertical divisions (Figs. 11a, 11b, 15a, 15b, 16a and 16b).

Fig. 12a and 12b. Removing crumbling walls and completing missing parts then plastering and painting of façades using unified colors (Source: Authors)

Fig. 13 a and 13 b. Removing the traces of the partial demolition of the front bays in some buildings and completing the missing parts (Source: Authors)

Fig. 14a and 14b. Removing the inappropriate canopy covering the entrance gate of parking area and suggesting a new design for it (Source: Authors)

Fig. 15a and 15b. Adjusting skyline by raising heights of parapets and constructing walls between columns of incomplete upper floors. (Authors)

Fig. 16a and 16b. Improving the character of façades by adding openings and stripes at regular rhythms. (Source: Authors)
• **Openings**: Windows and doors of informal buildings need to be emphasized to accentuate their aesthetic role in façades. This could be achieved by painting them in another color different from walls, such as dark beige or brown (Fig. 17a and 17b). Moreover, it is possible to improve the rhythm of openings in façades by modifying their shapes, sizes and disposition. This could be attained by expanding some openings and narrowing others to adjust their sizes. Also, blocking up some windows and reopening them in other positions could help to rearrange their distribution and improve their order. However, these interventions are difficult and not easily accepted by residents. In this regard, adding horizontal stripes to the façades could reduce the irregularity of openings.

![Image](17a: Before upgrading)

![Image](17b: Upgrading proposal)

Fig. 17a and 17b. Improving the character by emphasizing the color of openings and planting trees. (Source: Authors)

• **Building lines and setbacks**: Differences in setbacks could be reduced by adding high fences in front of recessed façades on the same line of projected buildings and converting the spaces in-between into small gardens to increase the regularity of building lines (Fig. 11a,b & 16a,b).

• **Architectural elements and details**: Using unified colors and adjusting the horizontal and vertical rhythms as well as the regular openings in the parapets contribute to improving the overall appearance of collective façades and ensure the simplicity of their details in comparison to their previous state. In addition, removing or hiding visual pollution factors such as air conditioning units, satellite dishes and advertisements from the façades could improve their appearance and reduce their dissonance. Some distinctive architectural features, such as the towers and domes of St. Mary Church and minarets of mosques could play an effective role as local landmarks that help visitors to identify their location while walking along the avenue.

• **Landscape of adjacent spaces**: Archaeological excavations have proven that trees and palms were adorning both sides of the Sphinxes Avenue in ancient times. Therefore, planting rows of palms and trees along the path contribute to restoring the original sense of place (Fig. 16b and 17b) and increase the feeling of homogeneity by hiding irregular features, in addition to their positive environmental effects on the hot climate of Luxor. Adding pavements and seats to the spaces adjacent to the avenue and connecting them with its lower level through stairs and ramps is necessary for the benefit of local people and visitors. Also, lighting units could be employed to emphasize more on the avenue and focus on the statues rather than the adjacent buildings.

D. **The Third and Fourth phases: Implementation of Proposed Strategies and Appraisal of Results**:

The previous proposals were introduced to the concerned parties and discussed with the responsible authorities such as Luxor Governorate, Development Research and Studies Organization, Central Agency for Reconstruction and Ministry of Housing, Utilities and Urban Communities. Some modifications were requested, such as the removal of the colored words suggested to be fixed on some facades so as not to cause confusion or draw attention of visitors.

Then, several negotiations were held with representatives from the local community. At first, people were skeptical and apprehensive about the project. They were afraid of any further demolition of their houses. After clarifying the different details of the project to them, they were encouraged to participate and share their opinions and suggestions. They appreciated the proposed plans and efforts to improve the urban image of the place. Some of them even requested to renovate the inner parts of their homes and the back streets behind their buildings in the same manner.

After getting their approvals, the essential drawings and documents needed for execution were prepared as well as time schedules and studies of the expected costs. Concerned authorities demanded that all work should be completed before the official opening of the avenue in November 2021.

Generally, the implementation of the proposed strategies helped to rectify many of the visual problems that were detected in the urban background of the avenue and led to improving the previously deteriorated character of the area. However, the high costs of execution in comparison to the available budget prevented from the full achievement of some intended goals, in addition to the structural complications that usually face such alterations and the difficulty to convince people to accept these interventions. An appraisal of the results was performed after the implementation phase to assess the efficiency of the applied measures as follows:

• **Decayed and incomplete parts**: The remaining parts and crumbling walls left over after demolition works were totally removed (Fig. 18a and 18b). The uneven surfaces of walls were straightened in finishing phase to make them more regular (Fig. 19a and 19b), and most of the missing parapets of upper roofs were built (Fig. 20a and 20b). A new gate for the parking area of Karnak Temple was constructed according to the proposed design (Fig. 14b and 21). Some walls were also built to infill the gaps between columns of
incomplete upper floors. However, it was difficult to apply these measures in all incomplete buildings due to financial and social obstacles.

**Fig. 18a and 18b.** Removing crumbling walls as well as plastering and painting of unfinished façades (Sources: Authors)

**Fig. 19a and 19b.** Irregular walls of unfinished façades were straightened in finishing phase (Photo credit: Authors)

**Fig. 20a and 20b.** Unfinished walls were plastered and painted, and missing parapets were built (Photo credit: Authors)

**Fig. 21.** The new gate to Karnak parking lot after execution

- **Finishes and colors:** Unfinished façades were plastered and painted to get rid of their previously rough and dusty appearance. Also, most of the other buildings were repainted again using unified colors (Figs. 18a to 20b and 22a to 25). This helped to achieve a great deal of harmony between inhomogeneous buildings. Some well-finished and distinctive buildings were left without modifying their colors, and this added a sense of variety and reduced monotony in the appearance of collective façades.

**Fig. 22a and 22b.** Plastering and painting of unfinished façades to replace their previously rough and dark appearance. (Photo credit: Authors)

**Fig. 23a and 23b.** Building new parapets and walls to complete the missing parts (Photo credit: Authors)
Heights: Completing the missing parts of parapets and walls of upper floors in some buildings helped to improve the rhythm of change in heights and reduced the irregularity of skylines to some degree (Fig. 25 and 26). Nevertheless, it was hard and highly expensive to adjust the heights of all buildings. On the other hand, adding horizontal stripes in dark colors to the façades of some buildings helped to improve the rhythm of horizontal divisions (Fig. 27 and 28).

Widths: Removing the crumbling parts of walls and using unified finishes in façades as well as adding regular openings to the parapets of some buildings enhanced the rhythm of horizontal divisions (Fig. 27 and 28), but not to the desired level because of the difficulty to adjust the widths of existing buildings without removing and rebuilding them again at regular distances.

Openings: Windows and doors were almost obscured and dimmed due to the gloomy and dusty appearance of unfinished buildings. Painting them in dark colors different from walls helped to emphasize their visual role and improved the rhythm of façades (Fig. 29a and 29b). Some adjustments were also made to their shapes, sizes and disposition but not on a large scale due to financial and social difficulties.

Building lines and setbacks: The retaining walls on both sides of the avenue played an important role in hiding the irregularity of building lines (Fig. 25 and 26). Some walls were built in front of recessed façades to increase the degree of regularity, but still not enough to achieve the desired level of homogeneity.
• **Architectural elements and details:** Using similar finishes and colors in building exteriors and the removal of visual pollution factors helped to simplify and reduce the negative effect of inconsistent and chaotic details of collective façades. The regular openings of parapets and the horizontal stripes of façades also increased the sense of homogeneity. Moreover, the distinct buildings, such as St. Mary Church, were renovated in different colors to highlight their visual role as local landmarks (Fig. 30).

• **Landscape of adjacent spaces:** Several palms and trees were planted at regular distances along the sides of the avenue, but they are still not enough. The streets and spaces in front of buildings were paved, but still lack sufficient seats and lampposts. Special lighting units were installed to illuminate the sphinxes and accentuate their distinctive features at night. These lightings played an effective role in the opening ceremony of the avenue on 25 November 2021 (Fig. 31 and 32).

![Fig. 30. St. Mary Church after renovation](image1)

![Fig. 31 and 32. Illumination of the Sphinxes Avenue at night [5]](image2)

**VII. Conclusion**

This paper has discussed the problem of inappropriate visual character of urban contexts surrounding many historic sites in Egypt. This exacerbating problem resulted from long years of urban encroachments, uncontrolled construction activities and unplanned informal districts that have been sprawled around these sites threatening their distinctive values and jeopardizing their uniqueness. The research has adopted an approach to upgrade the deteriorated character of such contexts without the need to totally remove these areas because the complexity of this solution which may cause other difficult problems on economic, social and political levels. A proposed framework has been suggested to achieve this goal consisting of four phases. The first phase aims at analyzing the degraded character of the urban background of the monument to indicate the visual problems and defects that detract from its homogeneity. The second phase seeks to suggest the appropriate strategies of intervention that could be used to get rid of these defects and upgrade the urban character of the area by modifying, replacing and improving its inconsistent visual features to achieve harmony between incompatible façades. In the third phase, the necessary measures are taken to implement the suggested solutions, and in the fourth phase an appraisal of the results after implementation is performed to evaluate the efficiency of the proposed strategies.

This framework was applied to the case of the Avenue of Sphinxes connecting Karnak and Luxor temples. After the demolition of the buildings that were standing above it, several visual and urban problems were found in the resulting linear space of the avenue, such as decaying appearance of informal buildings, unfinished façades, irregular building lines, inconsistent heights and widths as well as inhomogeneous rhythms and features. A number of strategies were suggested to upgrade this deteriorated character without any further demolitions, by altering and modifying the features of existing buildings to improve their visual appearance. The implementation phase has proven the effectiveness of the proposed strategies in achieving the intended goals and enhancing the degree of compatibility of inconsistent façades. However, the full achievement of some objectives was restricted by some obstacles, such as the high costs of execution in comparison to the available budget as well as the structural complications and the skeptical and resistant attitude of people towards such interventions.

The authors recommend that the application of the proposed strategies should continue until the full accomplishment of the desired objectives. Moreover, new urban regulations and restrictions should be issued to control the construction activities around the site and protect its character from any encroachments in the future. In addition, more comprehensive development plans are required to regenerate the area and exploit the uniqueness of the avenue by adding attractive activities and setting up new projects on its both sides for cultural and touristic purposes. In this regard, the suggestions of Abuinour. (2014) could be taken into consideration. He suggested to establish some attractive points along the avenue to enrich the experience of the visitors, such as an antiquarium (archeological museum), quality crafts neighborhood, folk’s house to promote local and traditional culture, Pharaonic gardens, green terraces and palm groves. Other activities could be added, such as restaurants, cafeterias, hotels, bazaars and so on. However, sufficient studies should be carried out before implementation of these suggestions to check their feasibility and suitability.
**AUTHORS CONTRIBUTION**

Ahmed Awaad Gomaa: Conception, data collection, data analysis, funding, supervision and critical revision of the article.

Mohamed Ahmed Rizq Ali Al-Sherbiny (Corresponding author): Theoretical background, data analysis, investigation, interpretation, methodology, drafting of the article, critical revision of the article and final approval of the version to be published.

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7. Arabic Title: الأثر الإلزامي للأنشطة الطبيعية على المناطق الريفية. دراسة حالة طريق أبو الهول بالأقصر، مصر

8. Arabic Abstract: يتناول هذا البحث أحد المداخل الهامة لمعالجة ظاهرة تدهور الطابع البصري التي أصابت السياقات العمرانية في مصر ومنطقة إفريقية في частности، وذلك باعتباره واحدًا من الحالات الكبيرة التي أصابت السياقات العمرانية في مصر وخصوصاً الأقصر، حيث خضع طريق الكباش منذ سنوات لمشروع ضخم تهدف إلى تحسينه.


25. references: "Fundamental and importance of the version to be published..."