

EXPLORING INCLUSIVITY OF STORYTELLING MUSEUMS IN CAIRO THROUGH DEVELOPING AN EDUCATIONAL ADVENTURE

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Abstract. Storytelling museums in Cairo play a crucial role in preserving memory, culture, and heritage values. This typology has been chosen to create an adventure for young architecture students to explore the built environment associated with the inclusivity of user groups. There is a gap of research targeting museums design from a humanistic approach, which was aimed to be covered in this paper. Interesting stories experienced by the architecture students reflect the reality of whether storytelling museums are inclusive for various user groups. The paper aims to unveil the experiences witnessed by a sample of 119 students in their attempts to explore how museums' design promotes the preservation of collective memory and addresses various user groups. The selected case studies which are 7 museums vary in their approach and display. The methodology used is qualitatively assessing the theory bonding the spatial experience of the museum with the story it beholds through the adventures of exploration. The implication of the study is crucial for architects and educators in bonding architectural students to the collective memory of the nation through a methodology of exploratory learning. The paper concludes with recommendations to enhance the experience of this typology to play a more effective role in communities.

Keywords: Built environment education, story-telling museums, inclusivity, user-groups, interactive learning.

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1. Introduction

During the spring semester of 2022, year two students were exposed to experience some storytelling museums as part of their study of the Human Sciences in Architecture course. The course aims to inter-relate disciplines and theories associated with humanitarian aspects in architecture to architectural design. A series of lectures introducing theories of environmental psychology and cultural and behavioral studies were demonstrated with a focus on topics of culture, identity, meaning, spatial experience, and proxemics. Scientific research methods have been covered with small assignments applied to the issues mentioned. The covered methods aimed to introduce the students to different qualitative and quantitative approaches regarding the assessment of human behaviour in correlation with physical and spatial parameters which define our surrounding environmental settings.

The theme of storytelling museums has been adopted during the semester under study. The role of museums in our current era has also been introduced and discussed during a public lecture to one of the practicing architects, whose expertise lies in museum

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typologies, along with a field trip to the National Museum of Egyptian Civilization in Cairo. As an applied research project, a list of storytelling museums in Egypt has been provided to the students to select one case to apply their analysis based on the material taught. The method adopted in the class discussion was a platform to develop the student's ideas and allow for knowledge interchange between all groups.

The following subsections are going to demonstrate the theoretical framework adopted for the study of museums as a case study for human studies in architecture which is not commonly addressed in Environmental Behavioral Studies realms. However, it is noteworthy that the sample of 119 students, divided into 13 groups to study the seven museums; were encouraged to establish their literature review readings and shape their theoretical approach to answer the main research question; are story-telling museums in Cairo inclusive to various user-groups? The objectives of the research were to study whether story-telling museums spatial experiences convey the messages they behold, to what extent are users engaged in the museums' journey, and what is the communal vision the story-telling museums deliver? Those inquiries are answered during the exploratory journey and the outcomes of the students' analysis, which are further analyzed and correlated to practical implications in the discussion and conclusion parts.

The followings parts ground the theoretical relevance of museums in connection with communal inclusivity through discussing three main overarching themes, the relevance of museums to humanistic studies, the embodiment of narratives in museums journeys and finally the achievement of the sense of inclusivity. Those three main ideas will be used in the methodology to correlate the role of museums narratives and spatial settings in communal inclusivity.

1.1. Museums as a Case Study of Human Studies in Architecture

Through the course of human history, architecture has evolved from being a mere shelter from physical threats which exist in surrounding environments to an expression of culture and society. Through the modern movement architecture became a form of art, where formal qualities of space are emphasized. However, it did not take long for architects and theorists to realize the downside of treating architecture as a form of art neglecting the human aspect of the built environment. Different research streams, investigated by Ricci (2021), demonstrated that good architecture has clear psychological and physiological benefits that transcend the mere sense of aesthetically appealing appearance.”, Therefore, the course, as its title implies, focuses on the human dimension of the person-environment relationship to understand how we connect to architecture. The human dimension is not limited to tangible observable behavior but goes beyond that to what is perceived and felt. Relph (2008), the prominent human geographer, conceptualized place identity as the result of the interaction of three components of physical attributes, activities, and meaning. Through his model, the experience is not imposed nor passive but mutually interactive between the person and the surrounding environment, which implies the correlational character of the person-environment relationship. In addition, the model also highlights the role of emotions and feelings in constructing meaning that might appear less palpable and, therefore, less important. The same vision is adopted by many other theories before and after Relph (2008), such as Canter (1977), Rapoport (1993) and Kocaoğlu & Demirkan (2019). Relph (1985) later developed his model to define the surrounding settings into physical context and social context (Sime 1995). As shown in figure (1) Relph's evolved conception of place.

Therefore, the developed syllabus of the course was designed in relation to the

following concepts:

- The correlational character of the person-environment relationship.
- The multi-faceted nature of the experience in terms of behavior and latent psychological aspects.
- The environment is defined by its physical and social contexts.

In this context, museums as a case study in human sciences in architecture may at first seem to be not a clear example of behavioral interaction with architecture as museum visitors go through what seems to be a path of passive viewing. Yet, despite the apparent stillness of the museum's visitors, their minds are actively engaged. Which makes museums a good case study to understand the psychological effect of architectural settings in terms of space and form. And makes the research more challenging for the students and the staff as well.

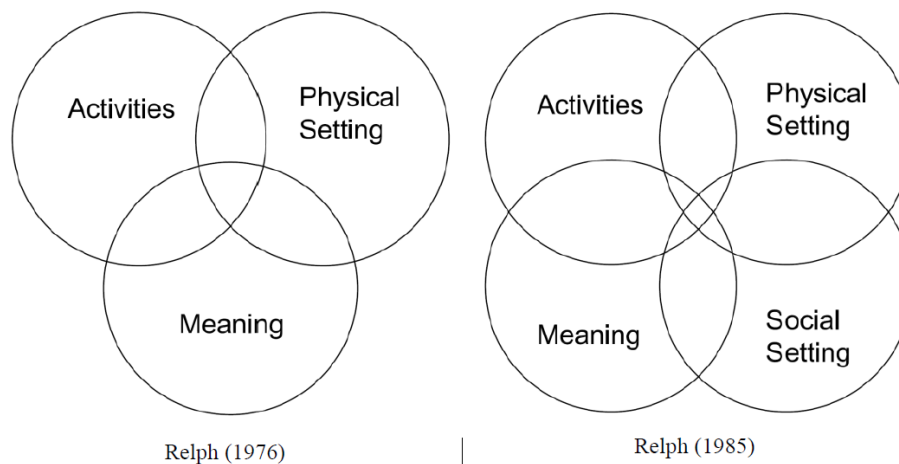


Figure 1. Evolution of Relph's Conception of Place Identity

1.2. How Museums Tell Stories: The Embodiment of Narratives

Alexander was among the first theoreticians to shift the focus of architectural theory to the human being. Emphasizing what can be called the architecture of a place which he tried to define into a set of patterns (Alexander *et al.*, 1977). However, he did not provide a way to nest these patterns together into a global whole. But his main statement is that architecture essence does not need to look good in photos but to feel good when experienced (Angel & Salingaros, 2022). As argued by Hillier and Hanson (1984), the essence of architecture goes beyond the apparent visual expression to the less-tangible aspect of space. "By giving shape and form to our material world, architecture structures the system of space in which we live and move". As any space system is comprised of a group of spaces that vary in their scales and physical attributes, each space possesses its own feeling or atmosphere experienced within the overall experience of other spaces within the system—in a way creating a pattern of atmospheres connected to each other in an overall totality. In this sense, "[Space systems] convey meaning not in the sense of representing something else, but only in the sense of constituting a pattern" (Hillier & Hanson, 1984). Or what has been termed by Spanou & Peponis (2003) as a nested pattern of atmospheres, where the human body is situated into an embodied experience that structures his emotions. As Damasio (1994) emphasized the unity of emotion and cognition, the emotions experienced motivate the human mind to think in directions

relevant to these elicited emotions through a process of associational metaphorical thinking, as termed by Modell (2003). In other words, we find a connection between our spatial experiences with a scope of meanings through our emotions experienced. And hence the extent the narrative happens depends on the level of congruence between what is emotionally experienced with the anticipated set of meanings as intentionally designed. In this line, Tuan (1977) explains:

In an ordinary setting, when he tries to envisage paradise by the power of his own imagination, his success is likely to be modest. But in the cathedral, his imagination need not soar unaided. The beauty of space and light that he can perceive enables him to apprehend effortlessly another and far greater glory.

Taken together, museums are not limited to their definition as non-profit organizations dedicated to conserving, researching, and exhibiting human heritage. But goes beyond that to provide spatial envelopes of intensified experience for a particular idea or group of ideas, where exhibition objects are not just displayed in glass cabinets but contextualized into a narrative to tell a story. And as humans are natural storytellers, museum visitors interact at a deeper level with museum exhibitions that tell a story. Consequently, the museum experience enables them to construct more lasting memories to share and stories to tell, which defines the role of learning through museums, (Falk & Dierking, 2011), "... stories are the most fundamental way we learn, they teach without preaching, encouraging both personal reflection and public discussion" (Bedford, 2001), and that's the role of storytelling museums.

1.3. Museums Achieved Sense of Inclusivity through Narrative Variations

According to Falk & Dierking (2011), the museum visit is structured into three phases: pre-visit, the visit, and after-visit. Where the viewer approaches the museum with a set of expectations and maybe motivations to visit the museum and explore its narrative. And then intentionally proceeds into a process of emotional immersion with the museum story, which is narrated through a scenario of nested spatial atmospheres, as explained earlier. The visit experience constructs different memory segments with the visitor that continues to be recalled and reconstructed with different variations through time, hence the museum learning process. Falk & Dierking (2011) explained that this three-phased experience happens through three connected contexts: personal, social, and physical. Direct similarity to Relph's (1985) model of place can be noticed but here focused on the experience of museum places. However, Falk & Dierking (2011) emphasized that these models and experience structures do not imply that all visitors experience the same story. The structure described is consistent, but the content differs, "each of the contexts is continuously constructed by the visitor, and the interaction of these create the visitor's experience. This constructed reality is unique to the individual; no two people ever see the world in quite the same way."

However, according to Relph (1985), this novel constructed reality has vertical and horizontal structuring. The vertical level defines the individual sense of meaning in terms of contents and depth of experience, while the horizontal level explains the distribution of reality among the individuals of the society. Thereby, the museum's sense of inclusivity is achieved through the museum's success in delivering a narrative that can be shared through different user groups. Where the story finds unique echoes within each individual, but collectively these echoes form a coral. Hence comes the meaning of

museum inclusivity as it depends on the museum's ability to create a shared narrative within society at the time and also has the ability to redefine the narrative through time and generations to come.

The importance of this sense of inclusion is that on the communal level, it re-defines the sense of community and at the same time strengthens the individual sense of belonging to that community (Basha-Jakupi *et al.*, 2021) . In other words, it provides a sustained logic of why we are living together.

The concluding remarks shape the research approach to focus on how the museums narrate stories through their spatial and social settings. Methods of spatial analysis such as justified graphs (Hillier & Hanson, 1984) were introduced as a method to reveal the underlying spatial scenario of museum exhibition galleries. Methods of proxemics analysis were demonstrated to explore the social context. Interviews and questionnaires were used to assess the viewers' involvement with the narrative told.

Finally, the following figure, (Figure 2), explains the research structure and sequence of analysis adopted in the next part of the methodology in relevance to the three main scopes covered in the theoretical part; "Museums as a reflection to Humanitarian Studies" , "Spatial Experience and Embodiment of Narratives" and "Inclusivity of Museums to various Users Groups".

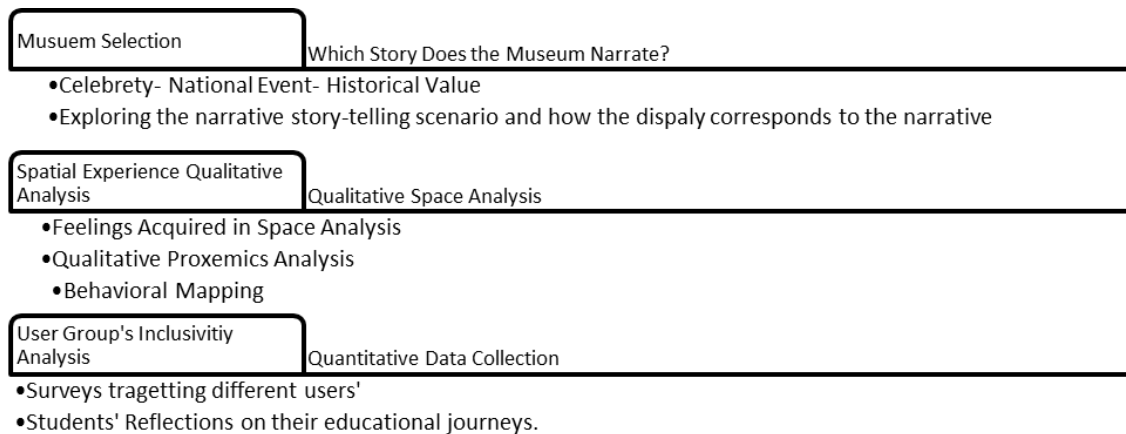


Figure 2. Research Structure Linking Theoretical Review to Analytical Strategy

2. Materials and Methods

The course used as the source of materials aims to inter-relate disciplines and theories associated with humanitarian aspects in architecture to architectural design. During the semester under study, the theme of storytelling museums has been adopted. A series of lectures introducing theories of culture, identity, and spatial experience, meanings in space, architecture as a cultural product, proxemics, and scientific research methods have been covered with small assignments applied to the topics mentioned. The role of museums in our current era has been also introduced and discussed during a public lecture to one of the practicing architects, whose expertise lies in Museum typologies, along with a field trip to the National Museum of Egyptian Civilization in Cairo. As an applied research project, a list of storytelling museums in Egypt has been provided to the students to select one case to apply their analysis based on the material taught. The

method adopted in the class discussion was a platform to develop the student's ideas and to allow for the interchange of knowledge between all groups.

The material collected in this research relied mainly on twelve groups of students' outcomes from the field-based deductive research. The total number of students involved in the process are 119. The students were given the freedom to select their group members, as well as the freedom to select the museum they wish to investigate. The design of the research implemented by the twelve groups depended on the analysis of a storytelling museum of their choice, based on two main categories. First is the theoretical approach they believe mostly suits the museum of their selection, and the second is a set of deductive, qualitative, and quantitative analyses. The deductive part covered the analysis of the spatial experience inside the museum, the humanistic studies related to proxemics and meanings, and the analysis of different user groups' behavior, and who were interviewed and observed while visiting the museum. The students visited the museums four times, one visit carried out on a weekly basis. They observed the samples of users visiting the museums as well as interviewed the individuals who accepted to undertake the process. Additionally, support data was collected from the administrative entities when applicable. The method adopted in the analysis in this research depends on a critical methodology, which provides a cross-reading between the twelve outcomes of museums' analysis from one side, and on the level of inclusivity, those groups of youth were allowed to maintain in the built environment under investigation. The following table (Table 1) shows the data acquired regarding the selection of the students of the museums studied.

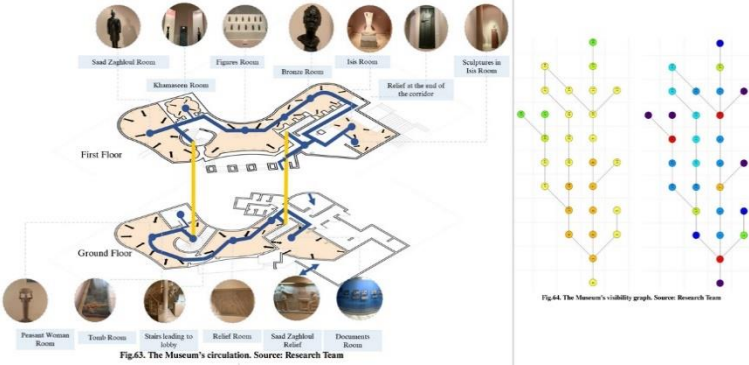
Table 1. Data of Museums under Investigation

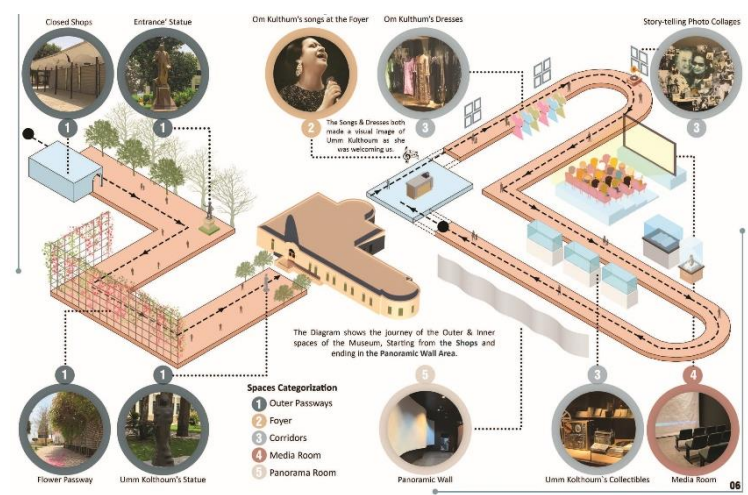
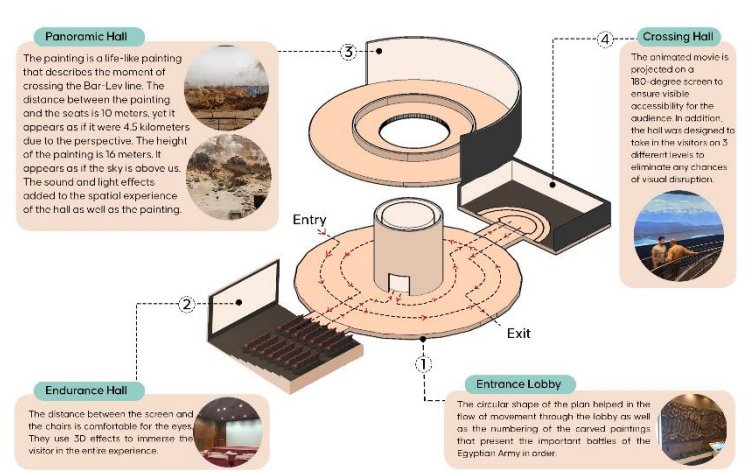
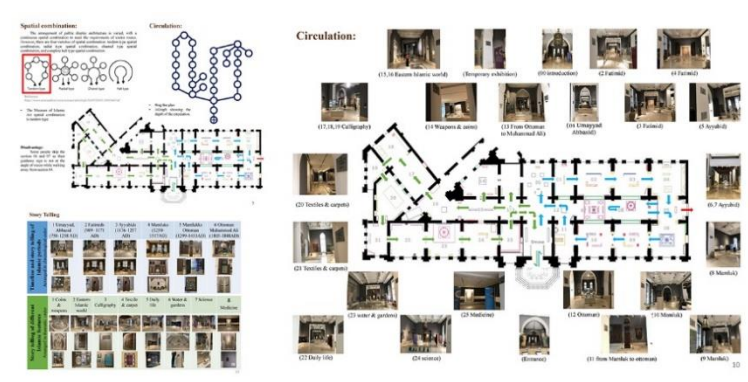
Museum	Groups	Students	Museum Theme	Chosen Title
Mahmoud Mokhtar	2	21	Showcase work of a famous Egyptian sculptor.	Walk, Look, Remember Storytelling Museum
Um Kalthoum	2	22	Maintaining the memory of a famous Egyptian Singer	Um Kalthoum Museum The Emotional Impact Of Museums On Humans
Panorama 6 th of October	3	28	Keeping the memory of the victory in 1973	A Walk in the Past Story Telling Museum
Museum of Islamic Art	1	9	Documenting the history of Islamic Art.	Museum As a Cultural Product
Taha Hussein	1	10	Acts as a memorial for a famous Egyptian Writer.	Taha Hussein Museum
Gayer Anderson	2	19	A historic house, previously owned by a colonial marshal, preserving his collectibles.	Gayer Anderson Museum as a Cultural Product
Ahmed Shawky	2	10	Keeping the memory of a famous Egyptian poet who adopted Abdel-Wahab, a famous Egyptian symphonist and singer, who lived with him in the same house.	Narrative Museums



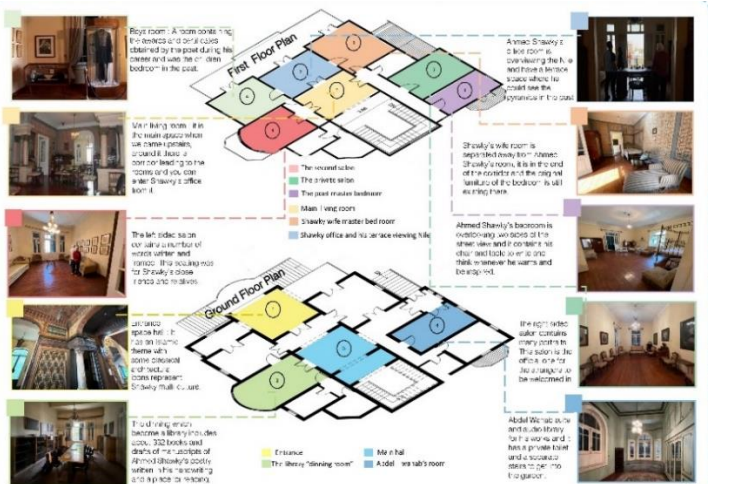
2.1. Spatial experience Deduced by Youth inside the Museum as Part of the Learning Experience

As part of the student’s perception and further understanding of how spatial experience affects the feelings and behaviors of users, the students were encouraged to analyze the space flow for each museum under study, as shown in (Table 2). The spaces were studied concerning meanings and schemata present in the museums. Additionally, the circulation assessment was analyzed with the storytelling scenario the museum aims to deliver. In some cases, as will be shown below, space syntax analysis was conducted on the museum space, to understand the degree of exposure of the different display areas. Every group of students analyzing the same museum had their different angles and perceptions of the space. And this was highly encouraged during the discussion sessions, to unveil the complex layers of understanding depending on the various experiences, exposures, and theoretical relevance the students undertake. Two main conclusions can be drawn from the analysis of the museums in the case of the spatial experience. First, in the case of museums that were not originally designed to function as so, i.e. originally a house of a famous person or the sort, the flow and spatial experience did not serve the display or the creation of an appealing storytelling exhibition scenario. In those cases, in our sample the Museum of Islamic Art, Taha Hussein, Gayer Anderson, and Ahmed Shawky, the spaces although well-preserved (except for some lost pieces), yet, did not create a unique experience to reflect the display rise and fall, climax, major historic moments, ..., etc. The circulation was clear, but not spacious enough to allow for larger numbers of users. On the contrary, the three museums which were originally designed to function as museums typology, Mahmoud Mokhtar, Um Kalthoum, and Panorama 6th of October, showed clarity of circulation associated with a storytelling scenario. The spaces, display, meanings in space, and schemata were delivered via various methods, which would be exposed in the concluding remarks in the table below (Table 2).

Table 2. Data of Museums under Investigation

Museum	Spatial experience analysis	Concluding Remarks on Spatial Experience
Mahmoud Mokhtar	 <p>The analysis includes two floor plans (First Floor and Ground Floor) with room labels such as 'Saad Zaghloul Room', 'Figures Room', 'Bronze Room', 'Isk Room', 'Sculptures in Isk Room', 'Khamasseh Room', and 'Relief at the end of the corridor'. A visibility graph (Fig. 64) shows a network of nodes and connections between rooms. Circulation paths are highlighted in blue on the floor plans. Source: Research Team.</p>	<ul style="list-style-type: none"> -Sculptural spatial experience reflecting schemata relevant to the character. -Clear flow and ascending experience.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Um Kalthoum</p>	 <p>The Diagram shows the journey of the Outer & Inner spaces of the Museum, Starting from the Shops and ending in the Panoramic Wall Area.</p> <p>Spaces Categorization</p> <ul style="list-style-type: none"> 1 Outer Passways 2 Foyer 3 Corridors 4 Media Room 5 Panorama Room 	<ul style="list-style-type: none"> -Very welcoming entrance approach. -Schemata is very dominant concerning the character the museum is narrating. -Interactive display modes, leaving the visitor well-oriented with the display although without a clear start and end of the story.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Panorama 6th Of October</p>	 <p>Panoramic Hall The painting is a life-like painting that describes the moment of crossing the Bar-Lev line. The distance between the painting and the seats is 10 meters, yet it appears as if it were 4.5 kilometers due to the perspective. The height of the painting is 16 meters. It appears as if the sky is above us. The sound and light effects added to the spatial experience of the hall as well as the painting.</p> <p>Crossing Hall The animated movie is projected on a 180-degree screen to ensure visible accessibility for the audience. In addition, the hall was designed to take in the visitors on 5 different levels to eliminate any chances of visual disruption.</p> <p>Endurance Hall The distance between the screen and the chairs is comfortable for the eyes. They use 3D effects to immerse the visitor in the entire experience.</p> <p>Entrance Lobby The circular shape of the plan helped in the flow of movement through the lobby as well as the numbering of the carved paintings that present the important battles of the Egyptian Army in order.</p>	<ul style="list-style-type: none"> -The spaces reflect the different schemata and meanings related to the war, the failures, the victory, the martyrs, and the post-war nation. -Display and storytelling powerfully manifested architecturally, although circulation is not well-defined.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Museum Of Islamic Art</p>	 <p>Spatial organization:</p> <p>Circulation:</p> <ul style="list-style-type: none"> (1) 18 Basins Islamic world (2) Temporary exhibition (3) Introduction (4) Islamic art (5) Islamic art (6) Islamic art (7) Islamic art (8) Islamic art (9) Islamic art (10) Islamic art (11) Islamic art (12) Islamic art (13) Islamic art (14) Islamic art (15) Islamic art (16) Islamic art (17) Islamic art (18) Islamic art (19) Islamic art (20) Islamic art (21) Islamic art (22) Islamic art (23) Islamic art (24) Islamic art (25) Islamic art (26) Islamic art (27) Islamic art (28) Islamic art (29) Islamic art (30) Islamic art 	<ul style="list-style-type: none"> -Flow of spaces and space syntax analysis reflect the lack of dynamic interactive experience. -The meanings and schemata stem from the elements and antiquities displayed.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Taha Hussein</p>	 <p>Luxurious Room Scenarios</p> <p>The interior of the house was used as a museum to display the collection of books and manuscripts of the author. The rooms were used as display spaces for the collection of books and manuscripts of the author.</p> <p>Library Room Scenarios</p> <p>The library room was used as a display space for the collection of books and manuscripts of the author. The room was used as a display space for the collection of books and manuscripts of the author.</p>	<p>-The different parts of the house were used as display spaces. -This did not provide enough experience related to the storytelling scenario.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Gayer Anderson</p>	 <p>Conclusion:</p> <ul style="list-style-type: none"> Museum is not well illuminated due to small openings and weak artificial lights Stairs and corridors are narrow A guide is needed in the trip to tell visitors the details as the story is not obvious Visibility is low due to the needed privacy of the designed house <p>Rooms and rooms can be crowded due to high ceilings, narrow stairs (open), high degree of visibility, high degree of light, and can be overcrowded due to low ceilings, narrow stairs (open), low degree of visibility, low degree of light.</p>	<p>-The museum display did not tell a specific story, but rather fragmented collections of the colonial owner. -The powerful storytelling scenario was created from the richness of the old houses' spatial experience which itself acts as a witness to cultural specificity.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Ahmed Shawky</p>	 <p>First Floor Plan</p> <ul style="list-style-type: none"> The museum is in the main space The main entrance Main living rooms Shawky wife's bedroom Shawky office and his service viewing hall <p>Ground Floor Plan</p> <ul style="list-style-type: none"> Entrance The Shawky's living room Main hall Abdel Wahab's room <p>Abdel Wahab's room contains many copies of his poems in the office or for his magazine as he returned in the past.</p> <p>Shawky's wife's room is a bedroom in the main space. It is the only room in the house that is not used as a museum.</p> <p>Abdel Wahab's room contains many copies of his poems in the office or for his magazine as he returned in the past.</p>	<p>-The house spaces did not allow for a comprehensive storytelling scenario. -Only displays related to the character and his life and family. -Merely the famous singer "Abdel-Wahab" wing acquired a deeper level of meaning associated with his famous songs and handwritten notes.</p>

2.2. Humanistic Studies Related to Proxemics and Meanings

In this section the sample groups of students were required to analyze spaces of the museums with proxemics theories. The definition of space, analysis of personal space Vs public spaces manifestations, and human behavioral patterns were documented and analyzed according to either qualitative observations or quantitative data as shown in (Table 3). Depending on each museum’s context, exposure, and publicity, various observations were taken. Most dominantly, was related to the interactions in outdoor spaces attached to the museums if available, (Bostanci & Akdag, 2020). If this reflects a pattern, then it would be related to the role museums play as public recreational spaces, which are inclusive for all without segregation, and can be admitted free of charge.

Table 3. Data of Museums under Investigation

Museum	Manifestation of Proxemics	Outcomes of Proxemics Analysis
Mahmoud Mokhtar	<p>DIFFERENT EXPERIENCES IN THE SPACE</p> <p>SHARED EXPERIENCE:</p> <ul style="list-style-type: none"> A group of staff cleaning Group of people taking a photo in the outdoor area group of youth drawing Mohamed mokhtar's sculpture Group of people talking in the outdoor area different group of people not sitting together during the same activity (gardening) <p>INTIMATE EXPERIENCE:</p> <ul style="list-style-type: none"> Students study the sculpture details a father visiting the museum with his son persons teaching the sculptures at the outdoor area <p>PERSONAL EXPERIENCE:</p> <ul style="list-style-type: none"> a girl focuses on the details of the sculptures in the jar between hall a girl taking a photo beside the columns at the entrance people enjoying the outdoor sculptures <p>INTERACTION SPACES:</p> <ul style="list-style-type: none"> Outdoor area Entrance hall big halls like "Emmes figures" hall memorabilia hall <p>The anxiety of visitors overcome in the outdoor space for on the way to get and enjoy the details of the landscape</p> <p>People prefer to sit around hall in the outdoor space for on the way to get and enjoy the details of the landscape</p> <p>People prefer to sit in large number of people in the outdoor space for on the way to get and enjoy the details of the landscape</p> <p>People in the memorabilia hall are not interested in the museum's life story.</p>	<p>-Most group interactions occurred in the garden approach of the museum.</p> <p>-The exhibition spaces witnessed fewer user interactions, and due to the highly defined spaces, personal spaces were easily preserved.</p>
Um Kalthoum	<p>We asked visitors if the museum provides the personal space they need</p> <p>▲ 64.3% said it saves them ▲ 35.7% said it does not provide it.</p> <p>We asked the users, is the museum space enough from their point of view to display Umm Kulthum's various holdings? 64.5% said that the space is insufficient and not worthy of a lady of Arabic singing</p> <p>▲ %20 they said the space is enough ▲ %80 they said the space is not enough</p> <p>Is the level of display adequate with the exhibits, organized and rich, or few and needs improvement and additions?</p> <p>▲ 45% said the offer was good ▲ 55% said the quality of the offer is not good</p> <p>Does the experience of décor, colors and lighting need to be improved or is it sufficient for the setting?</p> <p>▲ 19% said the experience was good ▲ 81% said it's not good</p> <p>Does the place have enough signs to describe the spaces, or does it need to put up signs to make it easier for visitors to move around the museum</p> <p>▲ 3.5% said signs are enough ▲ 96.5 said the signs were not enough</p> <p>Crowding Based on the opinions of visitors, 85% of them think the museum is not crowded. 15% crowded</p> <p>▲ 85% of them think the museum is not crowded. ▲ 15% see it as crowded</p> <p>How satisfied are visitors with the building</p> <p>▲ satisfied ▲ average satisfaction ▲ not satisfied</p> <p>▲ 60% said they were satisfied ▲ 40% said they were not satisfied</p> <p>▲ 60% said they were satisfied ▲ 40% said they were not satisfied</p> <p>▲ 60% said they were satisfied ▲ 40% said they were not satisfied</p> <p>▲ 60% said they were satisfied ▲ 40% said they were not satisfied</p> <p>▲ 60% said they were satisfied ▲ 40% said they were not satisfied</p> <p>▲ 60% said they were satisfied ▲ 40% said they were not satisfied</p>	<p>-A quantitative analytical approach was conducted by one group of the sample. The observed human behavioral patterns were categorized and then surveys were created to conclude with pie charts showcasing the results.</p> <p>-Most dominantly, bigger indoor gathering spaces were favored. The spaces were too small to allow for personal space adequacy while enjoying the museum display.</p>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Panorama 6th Of October</p>	<p>People take photos in front of the miniature models and holograms</p> <p>Kids like to play around the old war weaponry in the open exhibition area</p> <p>Workers Adults Kids</p> <p>A lot of people will be watching the mosque and the artwork in the lobby.</p> <p>People will be stacked in the halls during showtimes</p>	<p>-The observations in this case reflect the duality present in the panorama.</p> <p>-In the circulation corridors, used additionally as display exhibitions, the experience was spacious enough to allow for display and appreciated personal space by the users.</p> <p>The issue was in the halls which were not furnished to allow for the actual flow of the users. Thus, the sense of place was related to crowding and unease.</p>														
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Museum Of Islamic Art</p>	<table border="1"> <tr> <td>1 Umayyad, Abbasid (750-1258 AD)</td> <td>2 Fatimids (969- 1171 AD)</td> <td>3 Ayyubids (1176-1257 AD)</td> <td>4 Mamluks (1250-1517AD)</td> <td>5 Mamluks Ottoman (1299-1453AD)</td> <td>6 Ottoman Muhammed Ali (1805-1848AD)</td> </tr> <tr> <td>1 Coins & weapons</td> <td>2 Eastern Islamic world</td> <td>3 Calligraphy</td> <td>4 Textile & carpet</td> <td>5 Daily life</td> <td>6 Water & gardens</td> <td>7 Science</td> <td>8 Medicine</td> </tr> </table>	1 Umayyad, Abbasid (750-1258 AD)	2 Fatimids (969- 1171 AD)	3 Ayyubids (1176-1257 AD)	4 Mamluks (1250-1517AD)	5 Mamluks Ottoman (1299-1453AD)	6 Ottoman Muhammed Ali (1805-1848AD)	1 Coins & weapons	2 Eastern Islamic world	3 Calligraphy	4 Textile & carpet	5 Daily life	6 Water & gardens	7 Science	8 Medicine	<p>-As observed by the sample group, the display although rich in content and well-maintained, however, it is not attracting several users.</p> <p>The main player in the setting is the historical pieces, and the museum mostly lacks social interaction and the presence of users.</p>
1 Umayyad, Abbasid (750-1258 AD)	2 Fatimids (969- 1171 AD)	3 Ayyubids (1176-1257 AD)	4 Mamluks (1250-1517AD)	5 Mamluks Ottoman (1299-1453AD)	6 Ottoman Muhammed Ali (1805-1848AD)											
1 Coins & weapons	2 Eastern Islamic world	3 Calligraphy	4 Textile & carpet	5 Daily life	6 Water & gardens	7 Science	8 Medicine									
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Taha Hussein</p>		<p>-The renovated home of the famous novelist and writer showcases the spaces he lived in, his way of life, patterns of use, etc., which is appealing for users, yet, not adequate for group visits.</p> <p>Solitary spaces are the most observed pattern in the language of space, and how the visitors are forced to undertake.</p>														

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Gayer Anderson</p>	<p>proxemics theory</p> <p>Indoor, the distance between each group space does not exceed a meter. outdoor, it is divided 3 zonings for at least 3 groups, the distance between them is large enough for the size of the place.</p> <p>Through the observations of the place by its owners, the approximate ratios of the numbers and types of groups according to the convergent theory that :the largest percentage of visitors are (shared) then (Intimate) and few people come alone .</p> <p>Personal Intimate Shared behaviour APPROXIMATE</p>	<p>-The context and exposure of the museum in this case played an important role in its exposure, thus several users pay visits to enjoy the spaces and the gardens, especially families with children.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Ahmed Shawky</p>	<p>Some talk or walk with Shereif's statues in the garden</p> <p>there are not very use coming</p> <p>They save tour guide to show the space</p> <p>A. Intimacy Shawki is characterized by being very close to his family and this highly appears in :</p> <p>2. The privacy factors The museum management might ignore important factor which is privacy that could only be seen when an expert see the plans of the museums but the tour it self does not focus on this factor like in some space like :</p>	<p>-This museum beholds very similar traits related to proxemics as the museum of Taha Hussein. The renovated house doesn't allow for large group gatherings, merely a quick tour following the sense of place. Thus, a very limited number of visitors were observed, mostly gathering outside and then touring inside in small groups of 3.</p>

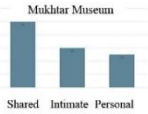
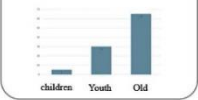
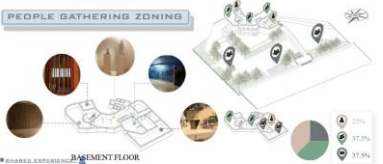

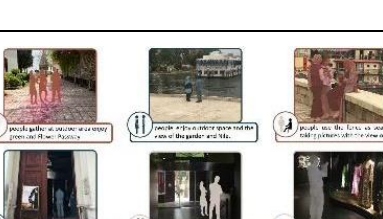
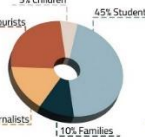
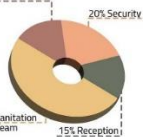
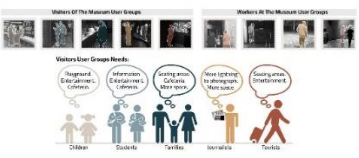
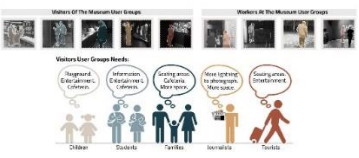



2.3. User Groups Analysis

This part of the analysis is concerned with the different types of user-groups visiting the museum. Special focus was directed towards the learning role the museum plays towards children and youth in particular. As has been highlighted before in the introduction, the museum acts as a cultural product, which leads a crucial role in the social sustainability of the communities. Additionally, its role is extended to deliver the memory of national assets to the younger generations, whether those assets are tangible heritage, intangible heritage, and memories of events, or famous people who played unforgettable roles in the nation's collective memory, (Ahmad Nia & Suleiman, 2018).

As compiled in the table below (Table 4), the sample of students was directed to collect data from either the museum's administration or from the visitors they observed during their visits. The data, in this case, focused on the types of users, the frequency of visits, and the most dominant activities if any which attracted them to frequently visit the museum. The findings showed that in small-scaled museums (Mahmoud Mokhtar, Um Kalthoum, Taha Hussein, and Ahmed Shawky), the visitors were very few in comparison to the museums of Islamic Art, the Panorama or Gayer Anderson. The visitors of the small-scaled museums were either tourists or journalists or professionals associated with the discipline of the person memorized by the museum. While the case of the Panorama

and Gayer Anderson was different, where families from the context were visiting the place frequently, enjoying the public space associated with the museum, or using the museum experience as a free recreational/educational activity. The remarkable finding is that in all museums, even in the case of the Islamic Art Museum which witnessed the least exposure, the museum administration worked on engaging children in lateral activities, workshops, school visits, or art activities related to the message of the museum. This reflects the role undertaken by the administrative parties, although diluted, occasional and with very limited resources to help acquire the knowledge spread effect expected from this scale of museums.

Table 4. Data of Museums under Investigation

Museum	Users Group Analysis	Behaviour of Users in Space
Mahmoud Mokhtar	<p>Small Number of young or children</p> <p>USER GROUP PERCENTAGES</p> <p>Old people are the most interested in knowing more about Mahmoud Mukhtar and visiting the museum.</p>  <p>Shared Intimate Personal</p>  <p>children Youth Old</p>	<p>PEOPLE GATHERING ZONING</p>  <p>BASEMENT FLOOR</p>  <p>PERSONAL EXPERIENCE</p> 
Um Kalthoum	<p>Visitors User Groups Percentage:</p>  <p>Workers User Groups Percentage:</p>  <p>Visitors of The Museum User Groups:</p>  <p>Workers of The Museum User Groups:</p>  <p>Visitors User Groups Needs:</p> <ul style="list-style-type: none"> Background Educational Contents Information Educational Contents Getting about Contents Easy ways More Technical information More books Getting around Information 	 <p>VISITORS OF THE MUSEUM USER GROUPS</p>  <p>WORKERS AT THE MUSEUM USER GROUPS</p> 

<p>Panorama 6th Of October</p>	<p>User Groups Analysis</p> <p>Foreigners vs. Egyptians</p> <p>Informative Visit vs. Recreational Visit</p> <p>ADULTS vs. KIDS</p> <p>KIDS Kids have high urge to discover new things. The visit to them is more of a learning experience and a chance to discover new things. They have a high degree of freedom.</p> <p>ADULTS Adults visit the place with a responsibility to take care of their children while exploring. Having witnessed these events, they go through them as a learning experience.</p>	<p>Fig. college students</p> <p>Fig. Student of scientific research</p> <p>Fig. School trip for students</p>
<p>Museum Of Islamic Art</p>		<ol style="list-style-type: none"> How did you know about the "Museum of Islamic Art in Cairo"? <input type="radio"/> A friend <input type="radio"/> Social media <input type="radio"/> From knowledge <input type="radio"/> Other Did you visit the museum before by your own will? <input type="radio"/> Yes <input type="radio"/> No Did you visit the museum as a formal visit with your institute? <input type="radio"/> Yes <input type="radio"/> No Did you have a background in the Islamic culture? <input type="radio"/> Yes <input type="radio"/> No If yes to the previous question, did you visit exactly your information? <input type="radio"/> Yes <input type="radio"/> No Average Time did you spend at the museum? <input type="radio"/> 30 min <input type="radio"/> 60 min <input type="radio"/> 90 min <input type="radio"/> 120 min <input type="radio"/> Over 120 min Have you had any misquidance while visiting? <input type="radio"/> Yes <input type="radio"/> No Overall experience. <input type="radio"/> Bad <input type="radio"/> Poor <input type="radio"/> Good <input type="radio"/> Very good <input type="radio"/> Excellent Were you able to visit all the halls of the museum? If not, why? <input type="radio"/> Yes <input type="radio"/> No Did you get a souvenir from the museum? <input type="radio"/> Yes <input type="radio"/> No
<p>Taha Hussein</p>	<p>Inside museum the Activity are limited to viewing exhibits</p>	
<p>Gayer Anderson</p>	<p>1 Tourist</p> <p>2 Students</p> <p>3 Egyptian adults</p> <p>4 Children</p>	



To wrap up the analysis derived by students under various titles discussed above, it is observed that there were two main categories related to the sample of museums investigated. The first category is the museums that were originally designed to function so, while the second is the category adapted for display. In the first category, we find Um Kalthoum, Panorama 6th of October, and Mahmoud Mokhtar museum. In the second category comes The Museum of Islamic Art, Gayer Anderson, Taha Hussein, and Ahmed Shawky. The first category provided a better user experience concerning meaning in space, proxemics, and spatial experience. This is reflected in the enhanced user groups sampling, presence, and activities in this category. While the second category reflects the adapted homes converted into museums, with extremely apparent variation in the perceived meaning in space, and very uncomfortable proxemics, especially in circulation paths. Thus, the user groups observed were less in number and the level of engagement with the museum as an overall result of the surveys conducted.

From the above discussion, the storytelling museums' experience is influenced by a group of factors that can be categorized as architecturally related factors and administrative factors. Architecturally related factors reveal the design intentions to narrate a story. These factors were examined through analysis of the spatial settings, the social settings, and the exhibition scenario. On the other hand, administrative factors show the museums' curators' awareness of the narrative, either designed or not, and their willingness to administrate the museum in the best way to connect with the visitors. The results of this analytical review will be exposed in the upcoming results section.

2.4. Inclusivity of the Educational Experience in Exploring the Built Environment

Finally, this section reviews some of the reflections and reactions of the students regarding their visits to the different museums under study. Such a layer may depend on more latent descriptions of human interaction with space, yet it arguably uncovers important aspects of the museums, contributing to a general reading of their functions and operation in the Egyptian context. Those reflections were qualitatively collected from the students during their weekly discussion post-visiting the museums and discussing their analysis based on the previous points of discussion. Thus, the seven museums are compared from this lens.

The first and arguably most important reflection by the students was related to their reception of a communicated meaning throughout their visits. Per the abovementioned definitions of the museum, it was noticed that the students' enthusiasm and engagement as they visited the museums was directly correlated with the incorporation of a clear narrative revolving around a timeline or a structure of historic events. Museums diverged in that regard. In the cases of Um Kalthoum and Taha Hussein, students clearly expressed the lack of a narrative. Their disappointment was arguably amplified by the fact that versions of these figures' stories are already internalized by most Egyptians through famous drama works and narratives in popular culture handed down by generations. In the case of Mahmoud Mokhtar, this popular image of the person may not exist, yet the groups studying the October Panorama have clearly expressed this attention and admiration for to timeline more than others, apparently influenced by the Panorama's elaborate and audio-visual narration of detailed sequences of events and involved parties in the 1973 conflict. It is also interesting to state that despite the different perceptions of the October war and its political aftermath, the elaborate exhibition of the events and their magnification through the military's ethos seems to have served as a meeting point or a common ground for these different "individual narratives". The presence of a strong "collective narrative", as discussed earlier, has made the Panorama one of the most successful projects among the studied museums.

Some problems of accessibility and orientation were observed. Problems of accessibility resulted from two main reasons. In some cases, this was related with historic buildings which were poorly appropriated to create an entrance experience differing from the original building use and to emphasize the main object/subject that will be displayed. This was evident in the museums of Gayer Anderson, Um Kalthoum, and Ahmed Shawky. Gayer Anderson Museum or Bayt Al-Keritliyya, for example, was originally an Ottoman residence typically organized into a central courtyard and a complex hierarchy of spaces divided between a Selamlık and a Haremlik. Students found it difficult to understand and interact with the museum since the circulation imposed a linear path onto a non-linear spatial structure as shown in the analysis before. There was a conflict between the curiosity to experience the building as a home (which is, to a great extent, the essence of the museum) and the obligation to follow signs and guides at every corner ensuring that visitors would not break the intended path. Um Kalthoum Museum had an equally perplexing experience, since the approach circulation in the outdoors has a better pleasant setting than that of the museum experience.

In other cases, such as Panorama October, the entrance experience was not spoiled by design but by undermining the museum's intended design where security concerns led to changes and restrictions to the circulation. The main entrance of Panorama October was not open to the public who had to search for secondary access to the building.

Students reported that the tour was guided by army conscripts rather than guides who were trained to communicate the messages conveyed by the monumental building. According to the students, Panorama's experience was both inspiring and frustrating. On the one hand, the display of events spoke for themselves, and the staff was inviting and proud of being part of the museum. On the other hand, the building extended the restricting atmosphere experienced in many places around the Egyptian city.

Security, in some cases, seemed to override the whole experience of the museum. Two groups reported that the museum staff was suspicious of them, going as far as to accuse them of trying to steal the displayed artifacts. Reflecting a crisis that arguably manifests on the national level where meaningful communication and institutional operation, which was dominant in the cases of Ahmed Shawky and Taha Hussein, where the groups of students were only allowed entry in three.

If those observations reflect a finding, it would be the lack of awareness from municipalities and administrative bodies concerning the importance of inclusiveness of story-telling museums, especially to youth. This will result in further future isolation of museums from the educational role they should play towards raising awareness of younger generations about their history and their contemporary built environment. Thus, the next part will focus on the results of the study and lessons learnt from the experiential educational experience.

3. Results

It is noted, by observing the students' expectations and experiences that the reservoir of historic periods, iconic events, and influential figures in Egyptian history almost autonomously produces a longing for narrative when one is to consciously engage with them in a spatial context. The innumerable artefacts and possessions in Egypt's museums are both testament to the potential and powerful tools of communication that arguably lack strategic use in their current state. The problem of emphasizing narrative and communicating meaning in Egyptian museums, however, is not merely related to the shortcomings of curation or design but is seemingly a result of indifference or insensitivity to this self-evident capacity for storytelling. Some of the studied museums may eventually appear functional by having large and consistent numbers of visitors. Yet their success can also be argued to emanate from their operation as affordable public spaces with outdoor areas and associated activities, an aspect that is scarce in Cairo's urban landscape.

If, as introduced earlier, architecture conveys meaning through its creation of patterns and spatial systems, then these [re]articulations of space and restrictions/permissions of movement that lie outside the formal and intended uses of the museums' spaces can tell us many things about them. The dysfunctions of the museums described by the students are a result of shortcomings in the design, on the one hand, and deliberate deviations from the design due to an allegedly more important objective which is security.

Concerning the inclusivity of various user groups, precisely children, it can be argued based on the previous analysis that museums have transformed from being cultural products to bureaucratic ones. The potential of engagement cannot be underestimated, given the space, the storytelling, and the possible enhancements in design to include more user-friendly interfaces. However, the will for inclusivity has not been evident in the case studies except for a few as having been exposed. Thus, the educational role of young

children in learning about their heritage and built environment is not as activated as it can fully be. Selected inclusivity is sometimes captured in archival material, which additionally reflects the selective exposure agenda.

The following table (Table 5) below demonstrates the factors' impact on each museum investigated. Each factor is given a score of one point or more according to how many aspects define it. By summing each museum's scores, we can reach an indicative score for the level of inclusivity achieved. These scores are not intended to provide any quantitative evaluation. Still, within the scope of this study, the developed numbers facilitated the comparison of different levels of inclusivity achieved between the museums selected as either above or less. A more quantifiable, relatively weighted scoring system can be developed in future studies.

Table 5. Compiled Results of Museums under Investigation

Museum	Architectural Aspects of the Narrative Total score: 8							Administrative Awareness Total score: 8							INCLUSIVITY SCORE				
	Spatial Experience Rating (2)		Achievement of Personal Space (3)			Achievement of Meaning in Space (3)			Attracts Various User Groups (4)				User Groups Engagement in Activities (4)						
									Egyptians		Foreigners								
	CLEAR CIRCULATION (1) SPACES RELATED TO SCENARIO (1)		HIGH (3)	MEDIUM (2)	LOW (1)	HIGH (3)	MEDIUM (2)	LOW (1)	ADULTS (1)	CHILDREN (1)	ADULTS (1)	CHILDREN (1)	HIGH (4)	MEDIUM (3)				LOW (2)	OCCASIONAL (1)
Mahmoud Mokhtar (MMM)	√	√	√			√			√							√	8	2	10
Um Kalthoum (Um K)	√				√		√		√	√				√			4	5	9
Panorama of 6 th October (6 th Oct)	√	√			√	√			√	√	√	√	√				6	8	14
Museum of Islamic Art (I Art)		√			√			√	√		√					√	3	3	6
Taha Hussein (TH)					√			√	√							√	2	2	4
Gayer Anderson (GA)					√	√			√	√	√					√	4	4	8
Ahmed Shawky (SA)	√				√		√		√							√	4	2	6

The implications of the results on the degree of fulfillment and inclusivity of museums as a building typology based on humanitarian studies will be developed in the upcoming discussion part.

4. Discussion and Conclusion

Finally, this part aims to discuss the results of the comparison conducted between the seven studied museums based on the mixed methodologies carried on. The results from the previous table are plotted in a diagram to reveal the spectrum of fulfillment of the narrative of museum to its physical spatial setting, and the extent of inclusivity achieved reflecting the museum's communal role.

The storytelling museums discussed lies between two poles; the pole of neglect and the pole of overprotection. What is more, needed for improvement in the current era is to understand and practice, is the fact that architecture is not only a product of the duality between space and the architect but is also forged by administrative choices and strategies that can spoil or activate the architect's intentions. Publicity and communal attachment will surely play a crucial role in the preservation of tangible and intangible heritage and will allow museums to extend these roles as cultural communal centers.

As concluded in the diagrammatic analysis represented in figure (3), the table scoring results are mapped to provide a better qualitative understanding concerning the location of the studied cases between the two previously mentioned poles of inclusivity. Architectural factors are measured on the X axis from 0 to 8. Where a score of 0 shows that the museum was not designed with a narrative in mind. And a score of 8 indicates a clear design intention to embody a narrative. On the Y axis, the administrative factors are assigned scores ranging from 0 to 8. Where a score of 0 represents the curators' neglect of the narrative significance, either designed or not, and a score of 8 shows the heightened awareness of the museum's narrative and their active effort to activate the narrative with various methods in addition to the architectural settings.

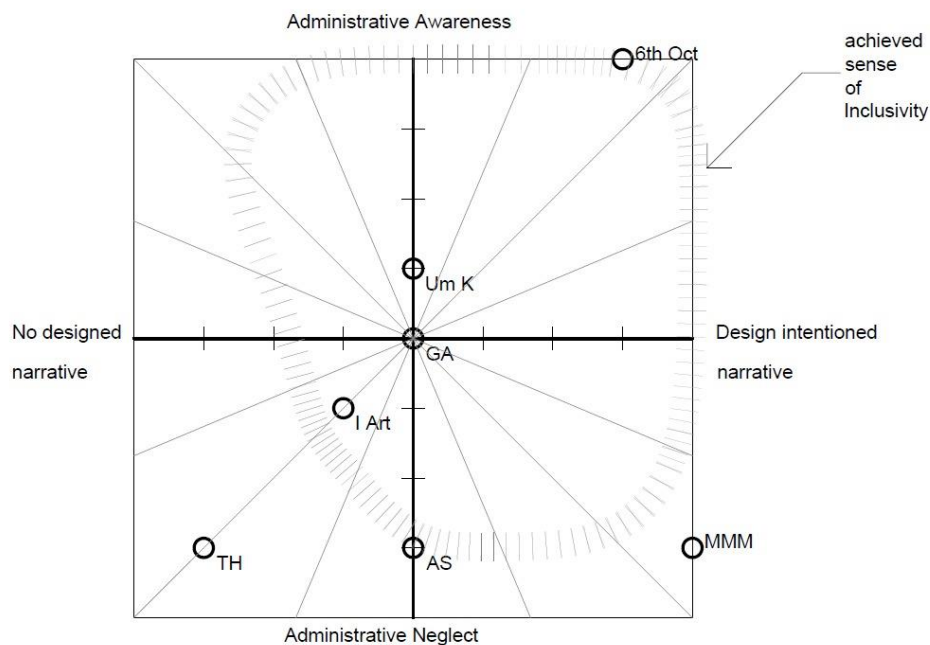


Figure 3. Scoring Results Mapping of the Levels of Inclusivity as an Outcome of the Analyzed Museums

Finally, the role of educators is to provide a pedagogical methodology acting as a platform to bridge the gap between youth and built environment education. This can

empower the community to further claim their rights in their cultural products from one side. On another side, those types of youth engagement provide realms for applying the “Sustainable Development Goals”, especially those related to “higher quality education”.

The results bridge the gap between the role of museum as a preservative of the memory of a person, an event or a historical era, and its direct communication with the community which is the targeted inclusivity role it should play. Between the success of the physical setting to first communicate positively with visitors, to deliver the message and to engage the visitors in the narrative scenario from one side, and from the other side of reaching out to the community and playing the defined role of community sustainability through inclusivity; we find that architectural design and administrative policies should go hand by hand. It is crucial for designers, educators and curators to re-address the museum typology as a more interactive hub for creating a dialogue with the community. Accepting various user groups and tailoring the museum’s spaces to include the wide spectrum of intended users is the only means to preserve the nation’s collective culture. Thus, museums should not be merely treated as warehouses of antiquities, but rather as hubs of collective learning between the community members through adding the layers of growth that allow the museum typology to phenomenologically evolve through time.

Future research can specify the means of adding an interactive facility along to the museum which allows for better engagement with the community. Additionally, special user groups needs can be thoroughly investigated to ensure the inclusivity of all community sectors within the museum typology.

Acknowledgements

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