

Interior Design of the Arab Opera House (The Cultural Artistic Center in Jeddah)

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Abstract

The Opera house has played a great role in the societies due to its impact on many social aspects. It has developed significantly through the years corresponding to the cultural and contextual changes in every region which indicate that developing a country level requires building an Opera house. As such, the Saudi Arabia futuristic vision in 2030 announced the intention to build an Opera house which this study suggested a design proposal for after the investigation and the analysis of the needed requirements and criteria of these type of projects

Keywords: Opera House, cultural changes, 2030 vision.

1. Introduction

The opera house considers a part of the human heritage that corresponded to its development through the years with the impact of cultural exchange (Agid and Tarondeau, 2010). Moreover, the opera art could be traced to the late eighteenth century since it has been linked significantly with music events and considered as a production of musicians which made the operatic occasions a place for generating great public responses (Parker, 2001). Moreover, Grout and Williams (2003) explained that it considers a drama in music and in acting since it happens on a stage with acting sceneries and singing poetic manuscripts. The researchers added that it is “the visible and audible projection of the power, wealth, and taste of the society that supports it” (p.1). As such, the Paris experience in opera art has marked a significant gesture since the nineteenth century where the operatic events were considered as revolutionary acts (Kenrick, 1996). Heyer (2009) and Grout and Williams (2003) also confirmed that it is an integration of art performance and cultural issues and religious ceremonies. Therefore, it is noticeable that opera houses have played a great role not only at the art level but at the social and political level since they enabled the liberation of communities.

1.1. Problem Statement

The Saudi Vision 2030 (vision2030.gov) which is the largest long-term plan of Saudi Arabia history that announced the country intention to achieve economic, political and social developments by several initiatives. As one of these initiatives is building an opera house since it plays a great role as a cultural voice that improves not only the communities’ art sensation but also the educational and mental levels. Moreover, it is known that the cultural projects required that respect of the country context and history. Therefore, there is a huge need for similar studies that investigate the requirements and the needed information for building an opera house. Moreover, the study will suggest a design proposal in Jeddah, Saudi Arabia of an opera house that aims to consider all the required criteria, standards, and considerations.

1.2. Research Objectives

The research aims to:

- Analyze the related standards and case studies to investigate the similarities and the differences in designing opera houses.
- Provide the methods for building an opera house that copes with the country cultural and historical heritage and context.
- Increase the educational and the cultural information of opera houses.
- Propose a suitable design for an opera house that will adopt all the needed considerations and criteria.

1.3. Research Significance

- Provide the needed data to build the opera house that will promote the social-artistic level and enable the cultural exchange.
- Increase the awareness of art importance that reflects the community economic and cultural level.
- Enable the creation of cultural building with high standards’ considerations that will revitalize the artistic activities; such as, choreography, songs, music, poem, etc.
- Provide a suitable design proposal to encourage the related authorities; Ministry of Culture and Information, General Authority for Entertainment, General Authority for Tourism and National Heritage.

1.4. Research Methodology

The opera house has a rich history that evolved and improved through the years; therefore, several considerations need to be revised to enable the research comprehensively. As such, multi approaches will be adopted due to the research nature which will collect the data from previous studies, related books, and similar researches:

1. *Historical approach*: The study will use it to create an overview of the project background among the different cultures.
2. *Descriptive approach*: It will be adopted in reviewing the opera house designing features, and explaining the common characteristics.
3. *Analytical approach*: The study will also use this method to analyze two of the most famous case studies; Opera Garnier in Paris and Sydney Opera House, which will represent the design standards among different periods of time. In other words, the findings of the case studies will be compared to conclude the most important design requirements and recommendations.

2. LITERATURE REVIEW

2.1. Opera House Overview

Opera houses were first designed as private spaces only, but in Venice in 1637, the opera house had the first public zone that occurred in a Palladio theatre that barely survived due to the timber construction materials which highlights the important impact of the chosen materials for the construction (Wilkinson, 2013). In addition, Wilkinson also represented many opera houses and discussed that during the years the designing obstacles of opera houses were as the following:

- The need to accommodate a great number of the audience in a space with providing good acoustics and visual abilities.
- Allow the comfortable and the safe circulation of the audience from and to their seats.
- The ability to provide a suitable space of the orchestra despite the size variations.
- Provide suitable spaces for the stage to enable the productive performance and the backstage for actors, staff, and required equipment.
- Design foyers, stairs and landing areas with appropriate sizes to enhance the users' circulation and activities.
- The site arrangement of different functions and their requirements.
- The avoiding of glare and eco using the acoustics absorption materials and suitable lighting methods.
- Ensure good ventilation methods that correspond to the audience amount inside the solid walls.
- Provide an adaptable design for the contradicted design requirements between the essential project function as an opera hall, and its actual function as a cultural space.

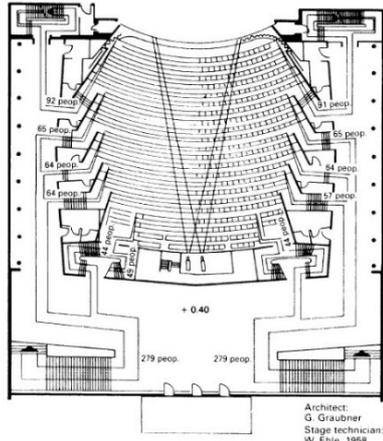
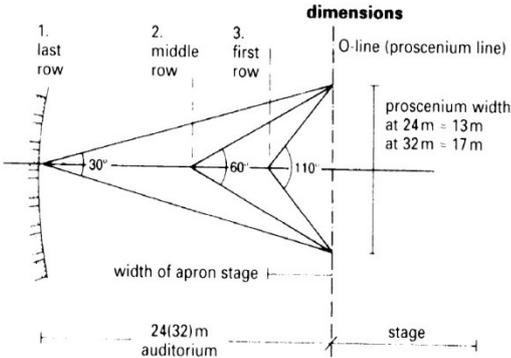
Rushton-Read (2008) added that the designers need "to ascertain the best flow between the two main performance rooms, the backstage building, and rehearsal spaces, plus the offices" (p.1). As such, the researcher emphasized on the process of designing several halls in opera houses that correspond to the different functions and requirements.

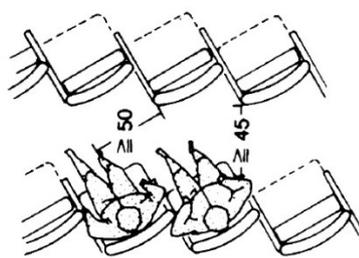
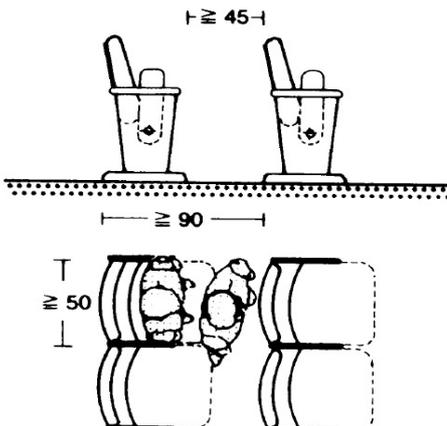
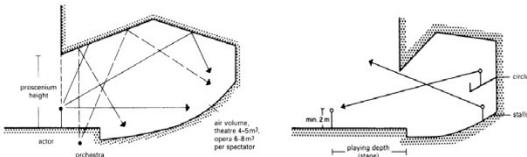
2.2. The architectural standards and considerations

According to Neufert (1970); the reliable architectural data that had been updated through the years, the opera house includes a library, services, museum, and most importantly the theater that adopts the different art shows. Moreover, to enable the required function of the theater, several standards and criteria need to be adopted (Table1):

Table 1: The Opera House Standards and criteria

Design Zone	Function	Design Criteria, Standards, and Dimensions
<i>Theater External Standards</i>	Entrance	<ul style="list-style-type: none"> - It requires a direct connection to the street with 1.5m minimum exits for every 300 users. - Every chair needs an area of 0.929m².
	lobby	<ul style="list-style-type: none"> - It requires an area of 0.13m² for every seat in the theater.
	Tickets Counter	<ul style="list-style-type: none"> - The related office needs to be separated from the users' circulation. - Every 1250 users need one ticket counter.
	Waiting Area	<ul style="list-style-type: none"> - It should be close to the services; toilets, drinking bar, etc. - It requires an area of 0.75m² for each seat in the theater.

Design Zone	Function	Design Criteria, Standards, and Dimensions
	Toilets	<ul style="list-style-type: none"> - For per 1,000 users, the men's toilets are with at least five urinals, three basins, two toilets with a smoking extra room. - For per 1,000 users, the women's toilets with at least five toilets and five tubs with an extra zone for makeup.
Theater Internal Standards	Surveillance distance	<ul style="list-style-type: none"> - The audience should be able to recognize the facial expressions; with a 20m maximum distance.
	Surveillance angles	<ul style="list-style-type: none"> - The seats need to be arranged in a way that ensures the equivalent surveillance.  <p>Architect: G. Graubner Stage technician: W. Ehle, 1958</p> <p>Figure: Theater example Source: (Neufert., 1970)</p>
		<ul style="list-style-type: none"> - The surveillance angles need to be from 110 degrees at the first row to 30 degrees for the last one to avoid the image distortion.  <p>Figure: Theater surveillance angles Source: (Neufert., 1970)</p>

Design Zone	Function	Design Criteria, Standards, and Dimensions
	Seats' Orientation	<ul style="list-style-type: none"> - The seats need to be orientated in a way that ensures the comfortable surveillance.  <p>Figure: Theater seats' orientation Source: (Neufert., 1970)</p>
	Theater Circulation	<ul style="list-style-type: none"> - The aisles are long with (1.2-1.9 m) width - The theater exit door width is between (1.2- 2.4 m). - The exist aisle need to be at least 1.3m with a minimum height of 2.3m.
	Theater Seats	<ul style="list-style-type: none"> - Each row must not contain more than 14 seats. - The distance between the rows is (45 to 1.44 m).  <p>Figure: Theater seats' dimensions Source: (Neufert., 1970)</p>
	Theater hall	<ul style="list-style-type: none"> - The total volume is from 4.2m³ to 5.6m³ for each seat without the stage zone.
	Stage	<ul style="list-style-type: none"> - For drama, the stage needs a height between (4.5-6 m) and a width between (9-12 m). - For music, the stage height is between (6-9 m) and a width between (12-15 m).
	Ceilings	<ul style="list-style-type: none"> - There must avoid the concave designs or smooth surfaces.  <p>Figure: Theater stage's design Source: (Neufert., 1970)</p>
	Stairs	<ul style="list-style-type: none"> - Locate on both sides of the theater with a width of 1.5m.

Design Zone	Function	Design Criteria, Standards, and Dimensions
	Walls	- The walls need to be completely solid, filled with sound-proof material, and covered with dispersed or absorbent material.
	Ventilation	- Th theater requires 0.85 m ³ of flowing air for every person per minute.
	Acoustics	- The acoustics insulation materials need to be used in walls and ceilings to absorb the eco and provide sound clearance for all audience.
<i>Services</i>	The security booth	- 2.7 m ²
	Changing room	- 9 m ²
	Makeup room	- 9 m ²
	Customs room	- 1.5 m ² /user
	Staff Toilets	- For every six users a toilet and a bathroom. - A bathroom for every actor with a private room.
	Stage waiting areas	- 4.5 m ²
	Shops	- 13.5 m ²
	Administration	- 9 m

3. THE CASE STUDIES ANALYSIS

3.1. The Garnier Paris Opera

The Charles Garnier's Paris Opera considers the most famous opera in the world since it is a masterpiece of public spaces with its unique architectural decorations; Beaux-Arts, which affected the design of many other projects (MoMA, 1975; Gazard et al., 1983). Since the project suggested many new ideas, its construction lasted from 1861-1975 (Schwarzer, 1998). The project “had reinstated the building as an elaborate shell of beautifully orchestrated spaces for social movement, set into the complex of the city...” (MoMA, 1975, p.19)

The Garnier Paris Opera, which was also known as Opéra de Paris, L'Opéra Garnier, and Paris Opéra, was a proposal of by a Danish architect; Charles Garnier, within an architectural design competition that was derived from the Dimond concept. Also, it was constructed during Haussmann great Paris reconstruction in the Empire of Napoleon III (Gazard et al., 1983). It was opened in 1875 with the attendance of 2000 personalities who came from all countries of Europe to see operatic shows, but after the years the building adopted the ballet more (www.annlaenendotme.com). Butler (2003) added that Garnier designed the Paris Opera House with the concrete foundation; double-walled foundation, with a groundwater draining system and the use of modern materials like the metal which enabled the overriding of the construction problems. The Garnier's Paris Opera has a great stage that accommodates about 450 artists with almost 2,200 audience seats; (Figure 3.1, 3.2), with the dimensions in Table 2 (Gazard et al., 1983):

Table 2: The Garnier Paris Opera General Information

<i>The Area</i>	237,11m ²
<i>The Length</i>	173m
<i>The Width</i>	125m
<i>The Height</i>	73.6m
<i>The Big Stairs</i>	30m to above
<i>The Big Lobby</i>	13m, 18m, 54m
<i>The Stage</i>	20m, 32m depth, 31 m width

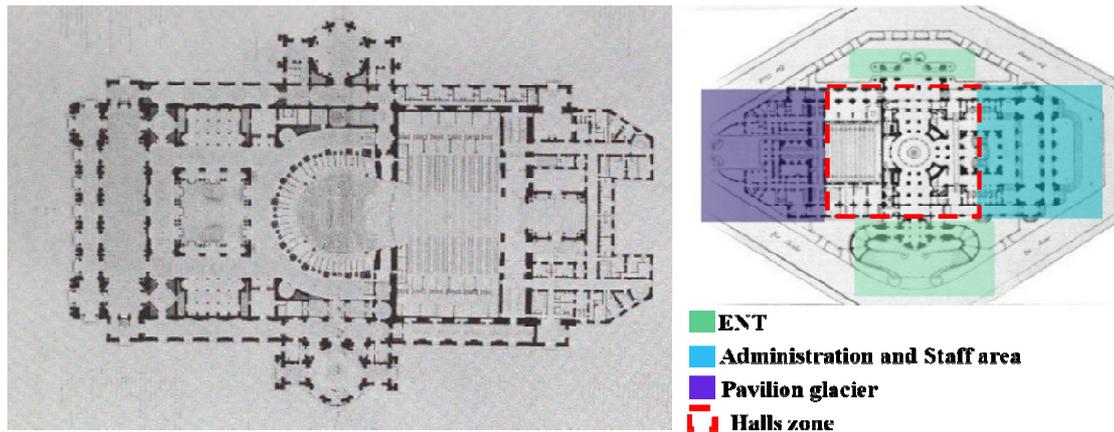


Figure 3.1: The Garnier Paris Opera- PLAN
 Source: (MoMA, 1975)

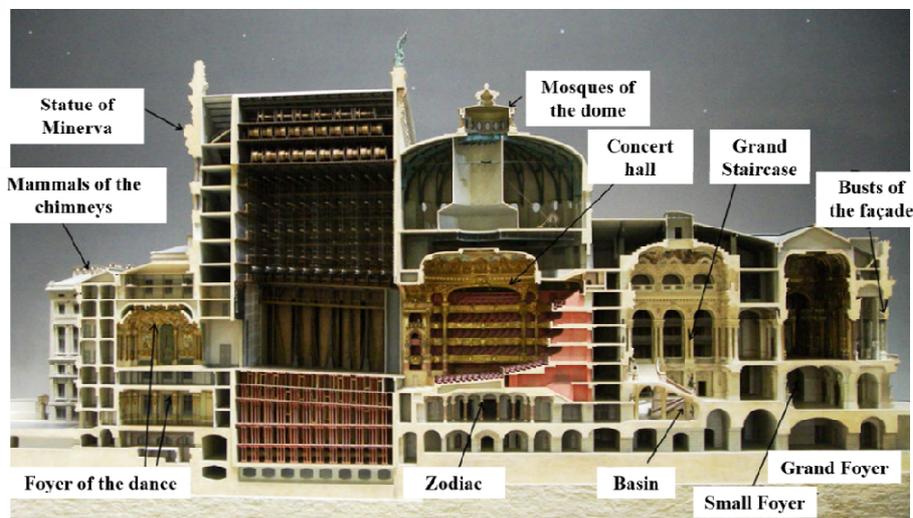


Figure 3.2: The Garnier Paris Opera- SECTION
 Source: the author according to (Wilkinson, 2013)

According to the World Heritage Encyclopedia; (Gazard et al., 1983), the Garnier Opera designed the interweaving aisles, wide stairs and halls, and the landing spaces with the consideration of human needs for comfortable circulation and the social gathering during the breaks. Furthermore, the building considers an opulence project with its use of the Beaux-Arts to create a monumental style for internal and external decorations. As such, the building adopted the axial symmetrical plan, ornamented elevations, and the multicolored marble decorations in floors, columns, and statuary. Also, it used the gilt copper, bronze, velvet, and gold in its ornamentations whether in walls, facades, ceilings (Figure 3.3). Thus, its interior design reflects the lavishness Baroque style that used the wooden walls to ensure the acoustic absorption, which according to Beranek (2004) the Garnier's Paris Opera has the rate number five in the best 13 international opera houses.



Figure 3.3: The Garnier Opera design
 Source: (Gazard et al., 1983; Butler, 2003).

1. *Sydney Opera House*

The Sydney Opera House was built in New South Wales 1973; Australia, which considers the most occupied art center in the world with a built area of 1.8 hectares, as EID (1983) elaborated. The researcher discussed that it consists of 1000 rooms with five main auditoria, reception hall, five rehearsal studios, four restaurants, six theatre bars, extensive foyer and lounge areas, sixty dressing rooms and suites, library, an artists' salon that known as the "Green Room," administrative offices and extensive. EID also mentioned that the project was sketched by Jorn Utzon who won an international competition for 233 admissions from 11 countries and was costed about \$7 million. Jorn Utzon adopted the concept of architectural components when several elements combined to create a logical whole; therefore, he derived his design from the orange segments' (Figure 3.4) (O'Halloran, 2004; W.A.T.T., 2000).

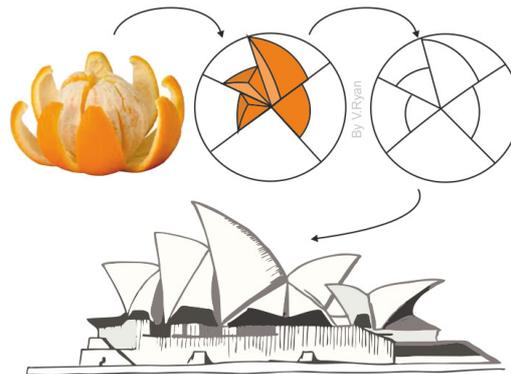


Figure 3.4: The Sydney Opera House concept sketch
Source: (W.A.T.T., 2000)

Moreover, the usable floor space of the project is 4.5 hectares with 185 m length and a 120m width, and it has a 67m height above the sea with a precast roof that weighs up to 15.5 tons of exactly 1,056,056 Swedish ceramic tiles arranged in 4,253 pre-cast lids (O'Halloran, 2004). Moreover, to ensure the appropriate acoustics and functional requirements, the project designed the concert hall individually with a bigger area and the opera theater that has a revolving stage (Figure 3.5) (Kerr, 1993):

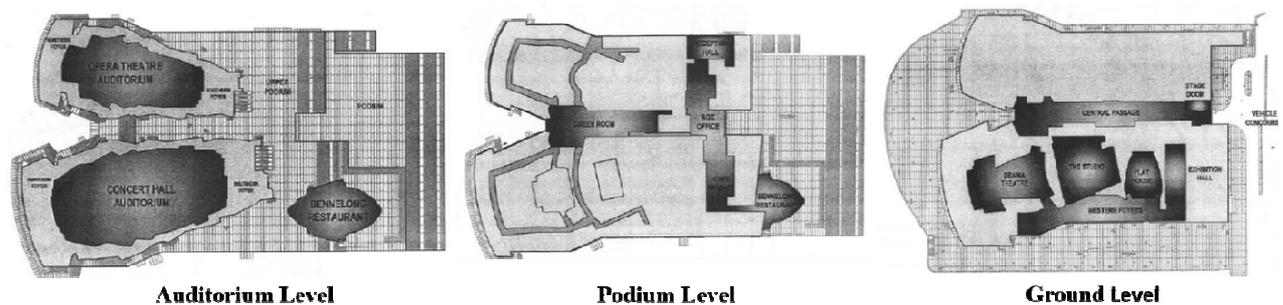


Figure3.5: The Sydney Opera House Plans
Source: (Kerr,1993)

1.1. *Major Hall (The Concert Hall)*

According to Taylor and Claringbold (2010) and Kerr (1993), it is the major; 'light' and 'optimistic' hall, that contains about 2,679 wool seats. It was constructed with 'steel structure supporting ceiling' and 'laminated Australian brush box timber' for its walls and floor with frames of 'Australian white birch veneer.' Also, the researcher added that the hall stage measures almost 17m wide with 11.5m deep at the center of the setting line with a ceiling height of almost 25m from above the stage which creates a great chamber space over the platform (Figure 3.6).

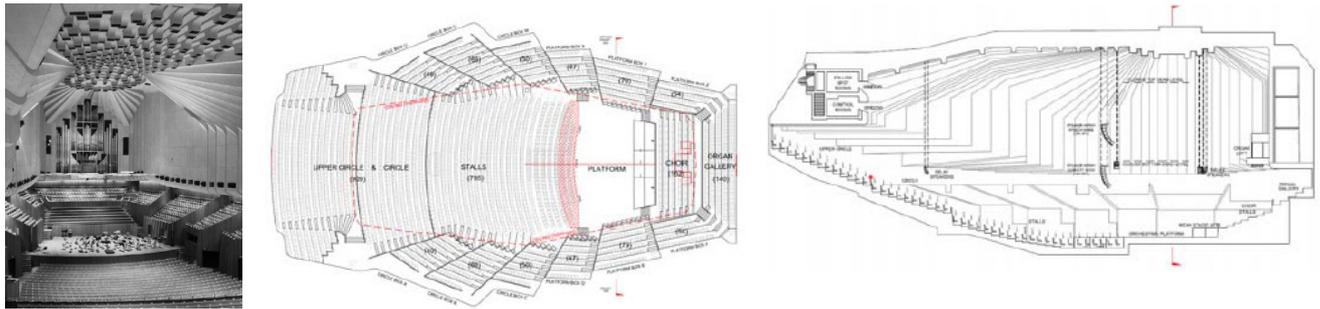


Figure 3.6: Sydney Opera House- Concert Hall Auditorium (plan-section)
Source: (Taylor and Claringbold, 2010; Kerr,1993)

1.2. *Minor Hall (Opera Theatre)*

It is the minor hall that has a steeply revolved stage with dark Australian veneer and matt black walls that creates a warmer environment (Kerr, 1993). The hall also has a height of 12m above the stage and contains almost 1507 seats (Figure 3.7) (Utzon, 2002).

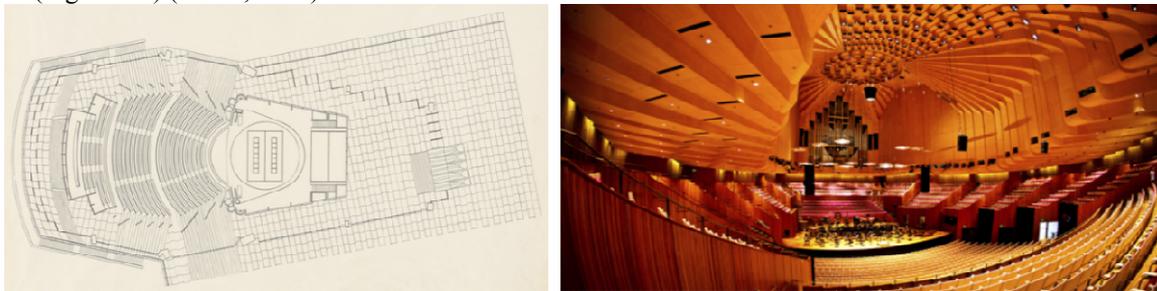


Figure 3.7: The Sydney Opera House -Opera Theatre
Source: (Sydney Opera House, 2013)

1.3. *Other Facilities:*

- *The Drama Theatre* that designed to seat from 500 to 750 persons, the Playhouse, and the Studio which was improved as new podium spaces for performance (Utzon, 2002).
- *The Reception Hall* that was designed within a comfortable space with an eastern view (Kerr,1993).
- *The Green Room* which shaped a linear space that extends from the cafeteria zone and located between the major and minor halls (Utzon, 2002; Taylor and Claringbold, 2010).

1.4. *Acoustic*

The project used the set acrylic rings; 'clouds,' or the prototypes rigged canopies that hung from an adaptable height to reflect the sound to the platform (Figure 3.8) (Taylor and Claringbold, 2010).



Figure 3.8: Acoustic Methods
Source: (Taylor and Claringbold, 2010)

4. DISCUSSION

From the previous literature and the analysis of Sydney Opera House and Garnier Paris Opera, it can be concluding the following:

- The opera house can consider a sculpture that defines the country and reflects its development.
- All opera houses have many similarities and differences that distinguish each project from the others.
- The design of an opera house can either influenced by the country heritage as Opera Garnier, or by its modernity as Sydney Opera House.
- Due to the different requirements of each type of art, it is recommended to design each hall individually as the Sydney Opera House, unlike the Opera Garnier that include all artistic activities in one hall.
- The interior design must cope the design approach that either adapts the heritage architectural schools that use the traditional decorations or the modern school that utilize the natural beauty of materials.
- The opera projects must provide suitable spaces for socializing and artistic activities.
- The design of an opera house must correspond to the comfortable flow of the audience despite their sizes.
- The administration and the services are preferred to be separated from the public spaces to enhance the comfortable circulation for the visitors and the staff.

5. CONCLUSION (The Research Resulted Proposal):

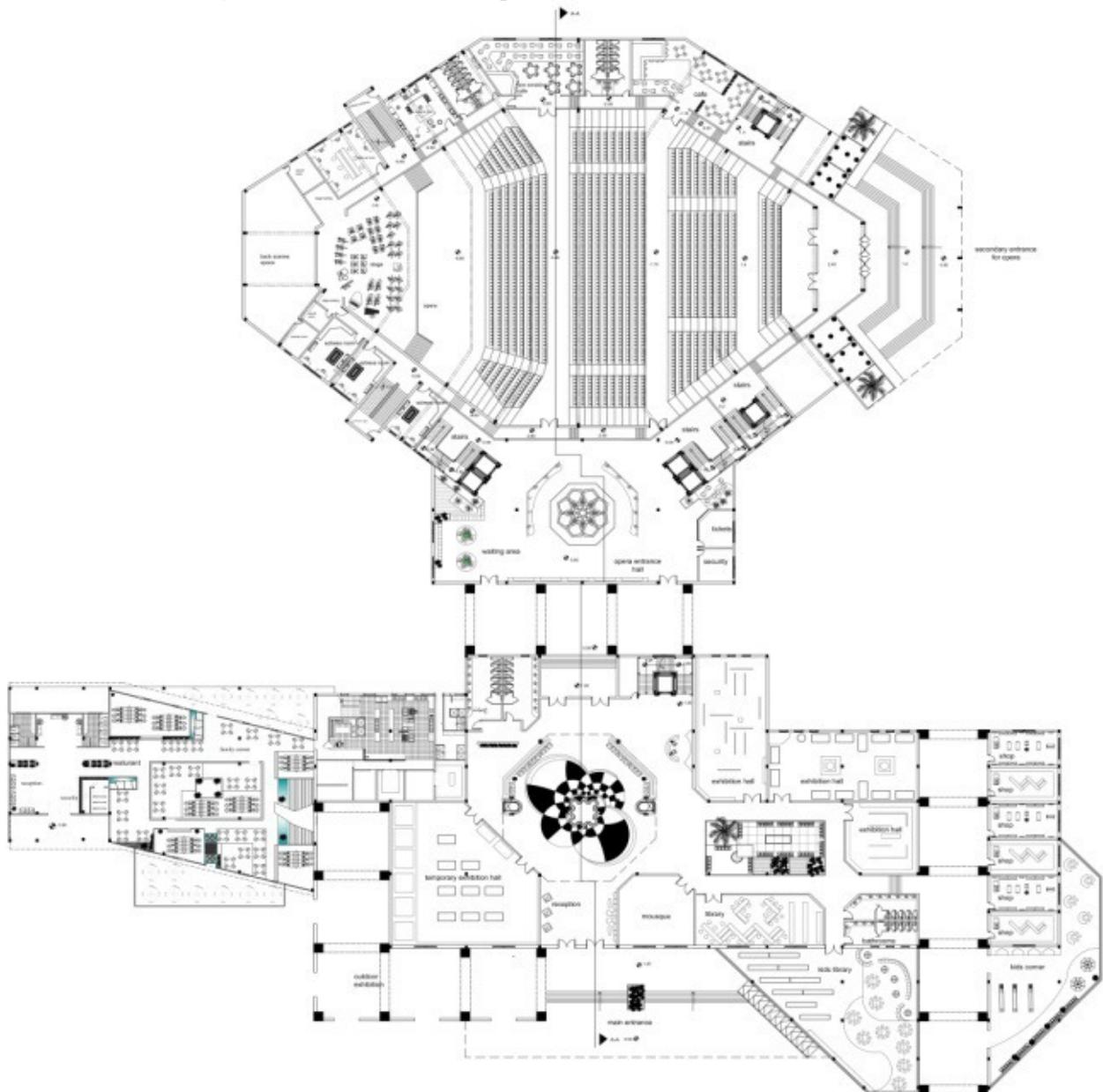


Figure 4.1: The proposed Jeddah opera house- Ground floor
Source: The author

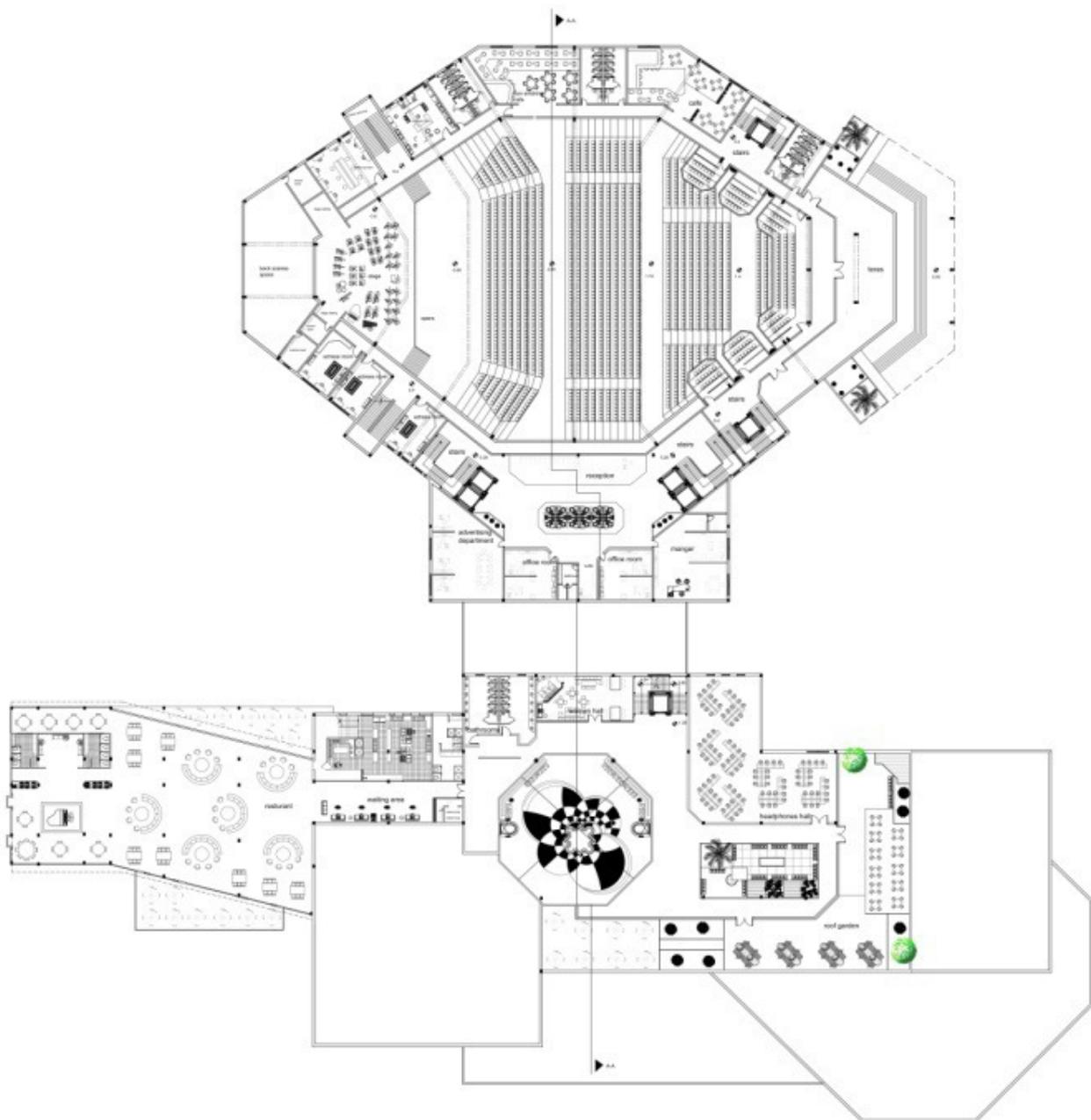


Figure 4.2: The proposed Jeddah opera house- First floor

Source: The author

According to the previous findings, the researcher suggested an opera house proposal in Jeddah; Saudi Arabia, which cope with the local context as the following:

- Design a whole project with all required functions; the major hall (theatre), the multi-purpose hall, the minor hall, visualize and acoustics library, retail shops, two restaurants; classic and Andalusian styles, mosque, administration, and services. As such, the researcher designed the major functions in all opera houses and added other spaces that correspond to local needs and requirements. Moreover, it is noticeable that the suggested project used the method of designing the functions separately since the international standards and criteria can be more applicable.
- Spaces for children to enrich their cultural and artistic awareness within the suitable methods for their ages and abilities by designing a children library and a learning park.
- Design the project within the international standards that ease the users' circulation despite the individual variations.
- The green architecture influenced the researcher design by designing the green roofs, parks, and the reliance on the natural lights and shads within the different levels.

- The architectural combination between the Andalusian style that reflects the period of flourishing arts and literature, and the Classic style which considers the preferred design style in most of the global opera houses.
- The proposed design suggested the adoption of high technological techniques especially the Nano illuminated ceiling that will create an adaptable roof where it changes with every artistic show according to the artistic panel design in the show.
- The proposal emphasized the importance of using the suitable acoustic insulation like the hollow bricks and rock wool sheets or other methods; derived from case studies.

RECOMMENDATIONS

- Highlight the importance of these type of projects for the cultural exchange and the Arabic art revival.
- Develop the artistic talents of the community especially for the young people by enhancing their potentials in art centers.
- Enrich the tourism by creating a new place that attracts tourists and citizens to enjoy the different types of art.
- For efficient projects, people with spatial needs who have many requirements need to be considered. These requirements have been clarified by the international standards to ensure the effectiveness of the architectural building.
- Every project needs to adopt the sustainable architecture that preserves energy, ecosystem, and natural resources.

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