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Rethinking the Heritage through a Modern and Contemporary Reinterpretation of Traditional Najd Architecture, Cultural Continuity in Riyadh

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Abstract: The expressiveness of architectural language in terms of the formal and aesthetic approach is a feature that should not be secondary in contemporary buildings. The surface, texture, form, representation, and expression should prevail over aesthetic purposes in architecture. This research aims to highlight how the plastic and expressive value of the traditional buildings in the Najd region of Saudi Arabia, rich in cultural heritage and building form, can be translated into contemporary ones, creating the continuity of the local cultural identity in a rapidly growing context. This research used a qualitative methodology based on selecting seven modern and contemporary case studies in Riyadh. The selected case studies were analyzed using four criteria: composition aspects, plastic figuration, expressive value, and context connection. The comparison of the case studies underlined the plasticity and malleability of the wall surfaces, the formal character, and the aesthetic approach, showing continuity with the cultural heritage of the Najd architecture. These examples demonstrate how architecture that is attentive to place and history, incorporating local materials and its cultural heritage, can represent an opportunity to rethink the constructive and aesthetic approach to provide guiding criteria for contemporary architects designing in the rapidly expanding city.

Keywords: cultural heritage; aesthetic approach; cultural identity; expressiveness; formal aspect; plastic volume; rough surface



Citation: Moscatelli, M. Rethinking the Heritage through a Modern and Contemporary Reinterpretation of Traditional Najd Architecture, Cultural Continuity in Riyadh. *Buildings* **2023**, *13*, 1471. <https://doi.org/10.3390/buildings13061471>

Academic Editor: Davide Settembre-Blundo

Received: 9 May 2023

Revised: 2 June 2023

Accepted: 4 June 2023

Published: 6 June 2023



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1. Introduction

In recent years, Riyadh, one of the fastest-growing cities in the Middle East, has been facing many changes in urban planning and the construction sector. Several mega projects are currently underway that will revolutionize the city, leading to the renewal of different areas, from historical ones rich in cultural heritage to the transformation of vacant lands, i.e., sites available for future residential and commercial developments within the city [1]. These new projects will profoundly affect the way spaces are experienced and local culture is perceived through architecture. The adoption of Western models, foreign to the Saudi cultural reality, has led the construction process of buildings lose its traditional values. The architectural styles of buildings reflect how people adapt to their local environment and culture, contributing to the transmission of social norms and order [2]. Therefore, there is a need to preserve and pass on traditional architecture to new architecture to stay in line with the strategic framework of Saudi Vision 2030. This strategy aims to strengthen the cultural aspects of the Kingdom through architectural design. The paper aims to support the vibrant culture of Saudi Arabia by trusting its past and looking to the future by unleashing new and stimulating expressions of form for new contemporary buildings [3]. Unfortunately, while some new policies, guidelines, and research are underway to address the challenge of conserving cultural heritage, little attention has been paid to its cultural and economic significance to date. Additionally, this stems from the fact that people have mainly focused on environmental issues rather than cultural ones, following the substantial concerns about climate change influencing the built heritage [4]. Contemporary

architecture has therefore accelerated the traditional loss of identity. One must consider the elements that characterize the local culture to aim at constructing technologically sustainable buildings. UNESCO (United Nations Educational, Scientific and Cultural Organization) is committed to unleashing the power of culture to achieve its 2030 Agenda. Indeed, it affirms that no development can be considered sustainable without including the “culture” and the “full integration of culture into sustainable development policies.” Building design should respect the environment and create an architecture that integrates local identity with the design process [5]. Therefore, the design of new buildings will have to guarantee the identity and collective memory of the place by communicating with the surrounding fabric [6].

This paper focuses on the importance of the continuity of traditional values through the architecture’s formal and plastic character, and the building’s skin is the critical point in this research. As Bacon said: “... Architectural form is the point of contact between mass and space (...) Architectural forms, textures, materials, modulation of light and shade, color, all combine to inject a quality or spirit that articulates space. The quality of the architecture will be determined by the skill of the designer in using and relating these elements, both in the interior spaces and in the spaces around buildings” [7] (pp. 16–18). This research highlights the communication abilities of architecture, focusing on the architectural form, the composition of masses and volumes, and the “skin” of the buildings, such as the external surface that covers them and their plastic and expressive form. The highly expressive surfaces and plastic volumes act as the interface and vehicle of thought for the interlocutor. The facade is usually conceived as a dividing object that separates the interior from the exterior space but should be a tool to evoke emotions. The surfaces steeped in history, local materials, textures, and geometries are architectural works linked to the past that are well integrated with the surrounding environment, creating cultural identity. The expressive value of the buildings achieved by the composition and aggregation of pure and simple volumes gives monumentality to the architectural artifact. The building is shaped to respond to formal expressiveness and suits the function of the urban context. A wall does not need excessive decorations, but the ornament becomes the search for a language to enhance the emotional aspect of the architectural experience through the construction material. Architecture, therefore, communicates through its forms, its colors, its materials, and its representativeness, referring to a universe of values related to its history and its relationships with the context [8].

The paper focuses on the materiality and malleability of the architecture in the Najd region. Najd is the great central plateau of Saudi Arabia, of which Riyadh is the most important city and the capital. Native architecture is its expression, built with irregular materials that mark the facade—wall surfaces made with raw materials and impregnated with memories from the past and the tradition of the place. The union between the characteristics of the place and the space is expressed through the sensitivity towards natural materials with their chromaticity and textures in the raw earth walls. The buildings seem to emerge from the rocky desert as an integral part of the natural environment. The shift from visual to tactile allows moving from the wall surface to the deeper layer imbued with culture, beliefs, and traditions [9]. The research aims to focus on architectural design as an expression of culture, beliefs, religions, and human perspectives that influence the way of building by relating the project to the surrounding fabric. The expressiveness and plastic figuration of the architectural space is a precondition to be integrated in the methodological approach of a project to prevail over the purely aesthetic aspect of architecture. This study attempts to highlight the importance of incorporating local materials and cultural heritage elements in contemporary architecture projects to identify strategies and guiding criteria through a constructive and aesthetic approach for contemporary architectures.

However, as previously mentioned, the rapid expansion of the city of Riyadh has adopted models from the West unrelated to the Najd architectural style. All this has led the building construction process to lose traditional values. In response, this study does not intend to highlight those buildings far from the local cultural tradition but instead attempts

to propose a selection of emblematic case studies highlighting the plastic and expressive form of their architecture, the movement of the masses, and how the chiaroscuro contrasts lead to a dynamic perception of space.

The following section describes the historical background of Najd architecture. Then, the paper presents its methodology involving seven case selections with their comparative analysis through four criteria: composition aspects, plastic figuration, expressive value, and context connection. The critical selection of the seven architectures focuses on the project configuration methodology, retracing the configuration process of the design idea, and was possible by studying the subject's architectural drawings, images, and publications. Through textures, technologies, and formal solutions in the building masses and envelope, the research has deepened the communicativeness of modern and contemporary architecture, focusing attention on some significant works by Frei Otto, Ian Fraser, Rasem Badran, Gerber Architekten, Schiattarella Associati, and Omrania.

The research analyzes the methodological process that led to incorporating Najd architectural elements and traditional materials in a reinvented perspective in the selected modern and contemporary buildings, avoiding a simple imitation. Finally, the paper concludes with a comparative analysis which leads to defining future directions to bring architects to rethink the constructive and aesthetic approach in designing and constructing new architectures without forgetting the culture and historical context of reference.

2. Historical Background

The choice to focus on this context is due to the richness of the cultural heritage, an expression of the local cultural identity of the Najd plateau in the center of Saudi Arabia. The Kingdom is 95% covered by a hot and dry desert [10], where there is a lot of sand. Desert, be it dunes or rock, is the most prominent feature of the Arabian Peninsula. An arid and challenging environment becomes a resource when architecture fits into the landscape with sensitivity and attention. Native buildings reveal how materials can withstand the harsh climatic conditions of arid climates and extreme temperatures. The spirit of adaptation has led the designers to create impressive architectures, starting with on-site materials and local construction techniques.

2.1. Historical Typology and Compositional Aspects

From the analysis of the buildings of traditional Najd architecture, architectural typologies emerged that are firmly rooted in the territory. The composition and arrangement of the masses and the materials used derive from the way of life of the local population, their culture, their lifestyle, and the arid climate. The main compositional and morphological aspects of traditional architecture in the Najd region are listed below.

Firstly, the research focused on the urban fabric, identifying an urban fragmentation with irregular housing typologies separated by narrow streets. This irregularity of the urban and building fabric is typical of Najd architecture and certainly comes from the warm climate to create more shading between the buildings. Emblematic is the UNESCO World Heritage Site of At-Turaif District in ad-Di'riyah, often known as "Historic Diriyah", located northwest of Riyadh in Wadi Hanifa Valley. The city of At-Turaif (Figure 1) was the first capital of the Saudi dynasty founded at the beginning of the eighteenth century. "The citadel of at-Turaif is representative of a diversified and fortified urban ensemble within an oasis. It comprises many palaces and is an outstanding example of the Najdi architectural and decorative style characteristic of the center of the Arabian Peninsula. It bears witness to a building method that is well adapted to its environment, to the use of adobe in major palatial complexes, along with a remarkable sense of geometrical decoration" [11]. At-Turaif District features a sizable urban fabric that illustrates Najd architecture's distinctiveness and uniqueness of urban design [12].



Figure 1. Urban fabric of the historic center of At-Turaif District, Riyadh (Source: Google Earth).

The Historic Diriyah exemplifies how people can adapt to living in a hot and dry environment within introverted housing typologies. The typical Najd house has a courtyard typology, with the living spaces built around a central space, be it an atrium, a patio, or a courtyard [13]. The central area takes on various geometric configurations, usually in the shape of a square or rectangle. The courtyard has a dual function: it is the fulcrum of family life in the house and acts as a light well and airshaft to reduce the temperature during the hot hours of the day and cool the rooms to make spaces more livable and comfortable. The courtyard, therefore, represents an important typology for bringing nature into the Najd houses (Figure 2) [14,15].

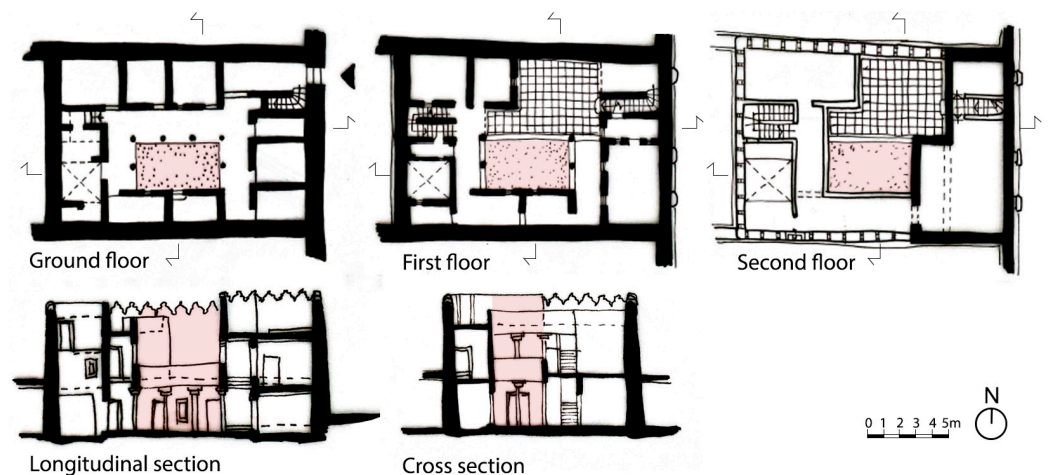


Figure 2. A typical Najd house: courtyard typology (Source: author).

Within the city's urban fabric, many houses are aggregated together. Each home has one or more courtyards to guarantee more privacy and open spaces and takes advantage of the air flows to offer optimal microclimatic functionality. The house's walls are, in fact, of a certain thickness to better isolate the interior spaces. The aggregation of the houses creates a cluster of buildings divided by narrow spaces for connection and the movement of people [16].

Subsequently, this research focused on the historic center of Ad Dirah, whose origins can be traced back to 1737. The neighborhood is today a popular tourist attraction as it hosts several historical and traditional landmarks of Najd Architecture, such as the valuable historical typologies of Al Masmak Fortress and the oldest part of the main traditional market, the Souq Al Zel (Figure 3).

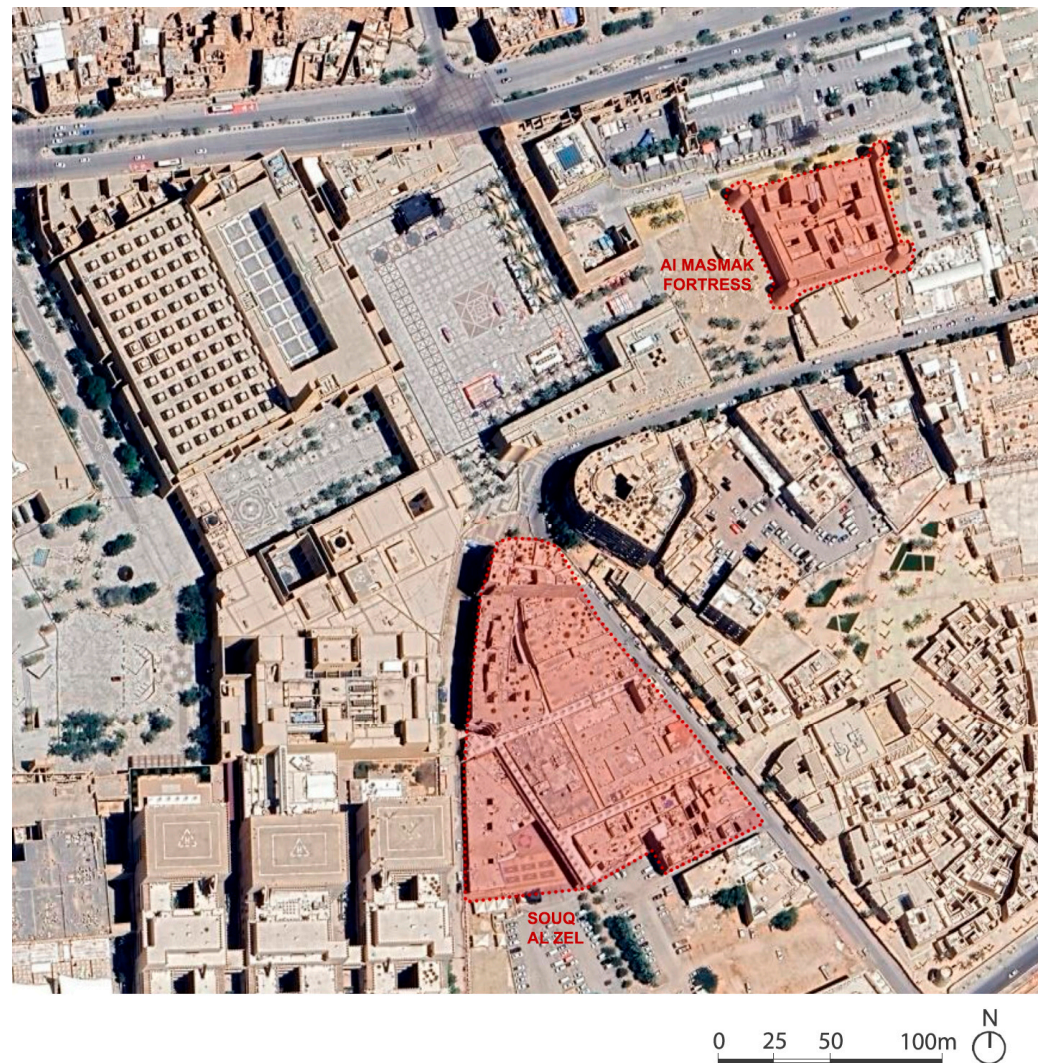


Figure 3. Historic center of Ad Dirah, Riyadh: Al Masmak Fortress and Souq Al Zel (Source: Google Earth with Author elaboration).

The Al Masmak Fortress, located in the historic commercial center of Ad Dirah, is an important symbol of Saudi unification (Figure 4). The palace, now transformed into a museum, still preserves today the characteristics of Najd architecture, from its architectural form to the Najd elements that characterize its facades [17]. Al Masmak is a significant example of a defensive structure with a rectangular plan. The spaces are distributed along the perimeter and around the courtyards (Figure 4a). A porch acts as a transition space between the rooms and the various open courtyards of different shapes and sizes, which take up the architectural typology of the courtyard house, an introverted typology due to its original defensive function (Figure 4b). Here, too, the courtyards help to facilitate the lighting and ventilation of the spaces along the perimeter. The four defensive towers at the four corners characterize the facades and thick mud walls, a characteristic material of the native architecture [18,19].

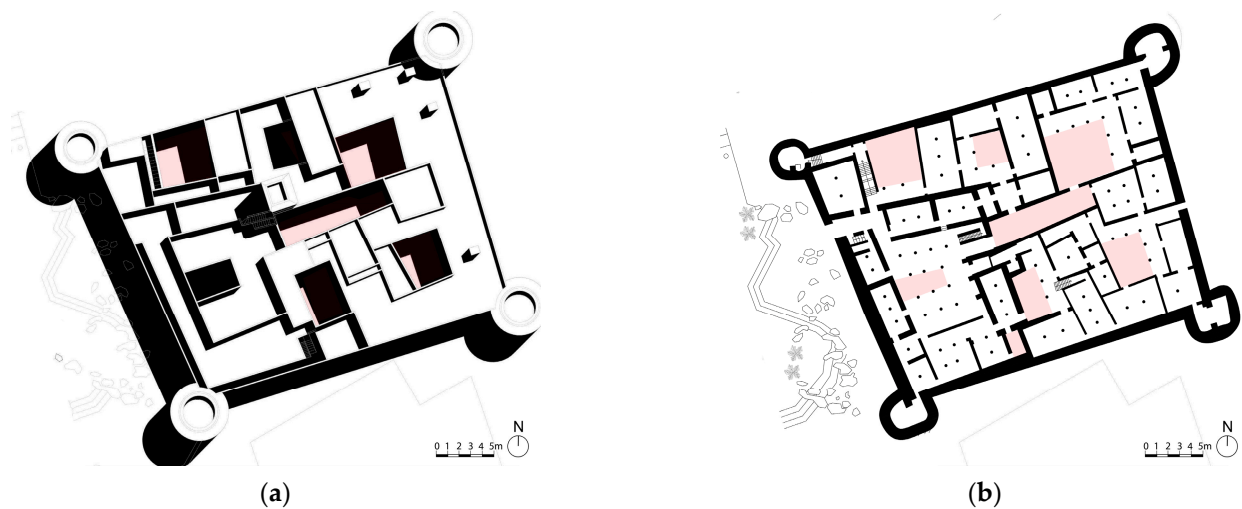


Figure 4. Al Masmak Fortress (Source: Drawings of the students of Architectural Design II, A.Y. 2022–2023, supervised by the author): (a) Top view showing the different courtyards inside the defensive walls; (b) ground floor showing the several spaces around the open courtyards.

Another architectural typology that characterizes the historic center of Ad Dirah is the traditional Arab market. Souq Al Zel, Riyadh's old market in the heart of the city, covers an area of 38,000 square meters. It is one of Riyadh's oldest traditional markets, carrying 100 years of history in its narrow streets (Figure 5). Therefore, Souq's morphology is an urban element where small space partitions create an economic network in the city. The labyrinthine streets are usually thin and congested with antique displays, rare coins, old tools, and interesting objects that seem to come from a museum of ancient folklore. Souq Al Zel presents a compact fabric comprising a network of primary and secondary pathways intersecting at right angles. The shops are grouped back-to-back along a common wall. The ratio between full and empty emphasizes the typology of the Souq (Figure 5a). Tents as shading devices are a vernacular feature on the roof of the pedestrian corridors and act as a successful local reference to other adjacent buildings in the surrounding historic area (Figure 5b) [20]. Three main plazas are covered with shading devices or open to the sky. The public plazas lead to the primary pedestrian roots, which branch into the pathways.

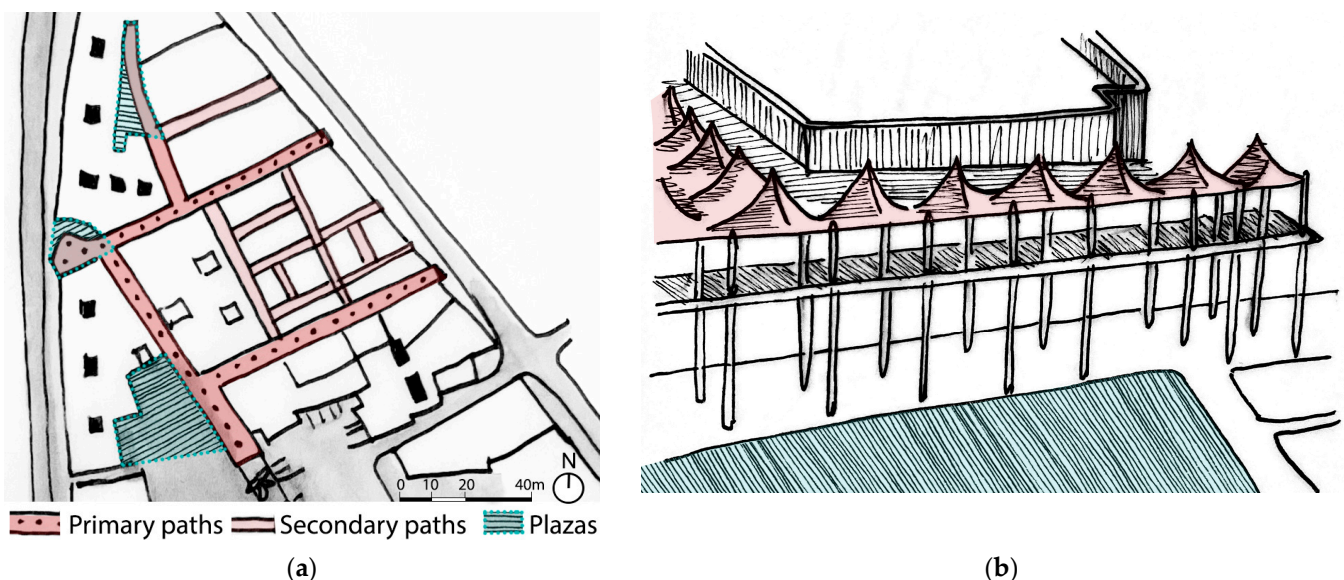


Figure 5. Souq Al Zel (Source: author): (a) Spatial hierarchy distribution of Souq Al Zel; (b) the use of tents on the roof of the pedestrian corridors.

2.2. The Architectural Elements of the Surfaces in Najd Native Architecture

This literature review analysis highlights some essential architectural elements that characterize the Najd native architecture. The research identifies those architectural elements that characterize traditional buildings' facades and give them expressive value and plastic representation. The analysis reveals that the native Najd architecture reflects the climatic conditions, the local availability of raw materials that generate the form and layout of the building, and sociocultural factors such as religion, customs, and values. Therefore, the interaction between religious and sociocultural aspects, local know-how, and the natural environment combine to generate the traditional built environment [21,22].

Various elements characterize the expressive and plastic value of the surfaces: the porous texture of the walls obtained from natural materials; the wall effervescence of the architectural element with an observation function (Tarma); the battlements at the top of the wall (Shurfat); the small openings in the walls (Furjat), and the engraved doors (Al-Bab).

- The porous texture of the walls obtained from organic materials. Given the scarce availability of stones and different varieties of trees suitable for construction, the buildings were built with mud or sun-dried bricks and finished with the application of mud plaster. The walls were very thick to isolate the interior spaces from extreme heat and to achieve greater structural integrity [23]. The mud bricks, composed of a mixture of water, straw, and other fibers, highlight the relationship between architectural artifice and naturalness. Straw and natural elements do not have an ornamental function, but they creep into the walls, creating efflorescence and contributing to the breakdown of the facade. The surface becomes tactile, rough, and imbued with Saudi culture and traditions. The walls become plastic, composed of the soil and the silt collected after the rainy seasons of "Wadi Hanifa," the valley in the Najd region. Furthermore, chromaticity plays a vital role in architectural constructions; the color of the earth, of the clayey soil, is the dominant color of the native architecture in Saudi Arabia. It almost seems that buildings shaped by the force of nature arise naturally from the ground as an integral part of the environment (Figure 6a).
- The wall effervescence of the architectural detail with an observation function (Tarma). A pronounced architectural element called Tarma characterizes the facade of the buildings, accentuating the porosity of the surfaces. It is usually arranged on the second floor and above the door. It works as a "peephole" to observe people outside the door of the building without being seen inside [24]. The Tarma of different shapes and sizes also has symbolic value, as it helps users of the urban space to identify the building and its entrance through the various forms of the element. It is interesting to note how the size of the interior spaces and the width of the street the building faces affect the size and shape of the Tarma. The relationship between symbol and ornament is inseparable from the local culture (Figure 6b).
- The battlements at the top of the wall (Shurfat). The hand-molded and layered walls are tapered upwards and finished in a crenelated shape. These decorative elements in the form of triangles or arrows, sometimes alternating between full and empty, create a proportional rhythm by acting as a parapet for the rooftop and, in turn, protecting the facades from rainwater. It is customary to find a horizontal strip engraved in the wall under these elements, with triangles underneath, always upside-down, as protection from rainwater (Figure 6c).
- The small openings in the walls (Furjat). The walls are often pierced with small rectangular or triangular openings, a feature of the Najd architectural style, to promote adequate air movement, lighting to the interior spaces, and the view from inside to outside. These small openings do not have a purely decorative function but are arranged vertically, horizontally, or in stacks, creating a pattern on the facade with different dispositions and densities [25]. The different arrangements of the openings meet the different socio-cultural needs of the population while preserving the technical and environmental characteristics [26]. The alternation of irregular openings of different shapes and sizes infuses the building with rhythm, lightening its visual weight by

breaking up the facade's composition and bringing out its expressive value. The result is a building that expresses an apparent simplicity and lives of a suggestive rhythmic cadence, capturing the observer's eye (Figure 6d).

- The doors (Al-Bab). The traditional Najd doors function as an access element to the building and are very particular in design. They are usually square in size, single-sided made of wood or palm trees. Some entrance doors are colored, engraved, and painted with geometric motifs, embellished with repetitive designs of a symbolic nature, and very pleasant in style and composition. The door and its visual features, use of color, and ornamentation support non-verbal communication by guiding the visitor to the building [27]. This element is an essential visual element to guide the local population and identify their position (Figure 6e).



Figure 6. Architectural features of Najd architecture (Source: author): (a) The porous texture of a wall in Rughabah village, north-west of Riyadh; (b) the element of “Tarma” on the facade of Al Masmak Fortress; (c) the “Shurfat” element in the Murabba Historical Palace, Riyadh; (d) the “Furjat” openings, At-Turaif District in ad-Di’riyah, Riyadh; (e) the “Al-Bab” traditional Najd door in Ushaiger village, north-west of Riyadh.

In summary, Figure 6 provides an overview of the five main features that characterize the surfaces of the building’s “skin” in Najd architecture.

3. Methodology

The research methodology (Figure 7) includes a qualitative analysis of the selected case studies: from their selection to on-site inspections, up to their analysis through four criteria: composition aspects, plastic figuration, expressive value, and context connection. The current research has applied a multicriteria method to ensure the validity of the results.

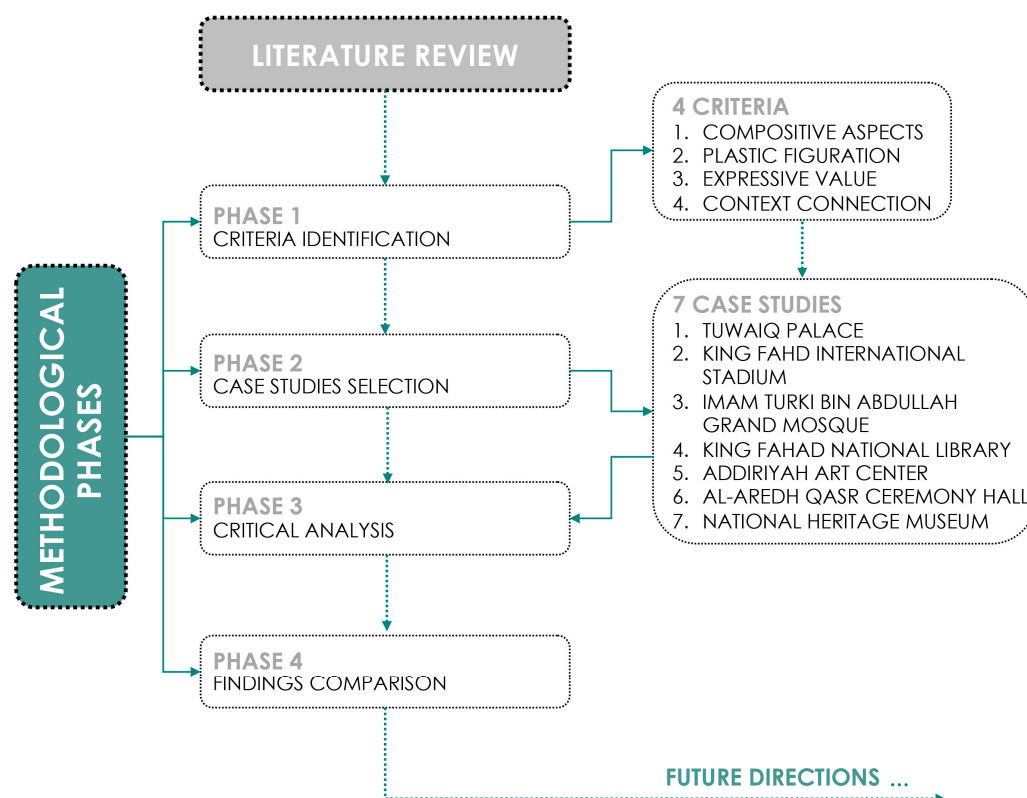


Figure 7. Methodological flowchart.

The characteristics of Najd architecture regarding the typology, masses, and skin of the buildings can be understood based on a literature review. The methodology tests the integration of the expressive value and plastic beauty of Najd architecture on modern and contemporary facilities to prove the architectural continuity of the local cultural heritage. In particular, the approach is structured according to four phases: (i) a definition of the four criteria, (ii) a selection of seven case studies, (iii) a critical analysis of the case studies, and (iv) the findings and discussion in context. The following sub-sections elaborate more on the selections and analysis of the case studies to define future strategic guidelines.

3.1. Identified Criteria

As a first step, the literature review identified those criteria that best describe the formal and aesthetic approach of an architectural building: compositive aspects, plastic figuration, expressive value, and context connection. Each criterion was, in turn, divided into sub-criteria to better define its characteristics in detail. The four criteria outlined in Table 1 explain the results and generate a verifiable hypothesis relating to the expressiveness and plasticity of the case studies identified in the following paragraph.

Table 1. Overview of the identified criteria.

Criteria	Definition Criteria	Sub-Criteria
Compositive aspects	Analysis of logical and artistic approaches for formal choices and the composition of spaces through historical and cultural integration.	(1) Historical typology (2) Space distribution (3) Space hierarchy
Plastic figuration	Quality of a building to develop freely in space, leaving its volume and richness of articulated forms perfectly visible.	(1) Mass aggregations (2) Plastic volumes (3) Surfaces malleability
Expressive value	Expressive character of the walls through the materiality of rough and tactile surfaces.	(1) Materiality (2) Surface roughness (3) Texture and geometry
Context connection	Integration of the project with the environment, paying attention to local resources and climatic aspects.	(1) Local resources (2) Environment characteristics (3) Climatic conditions

3.2. Case Studies Selection

The research was carried out on-site in the city of Riyadh. The choice to focus on this context was due to the richness of the cultural heritage, an expression of the local cultural continuity of Najd architecture through a selection of emblematic architecture. Five key points were used to select the seven cases:

- (i) Formal aspects,
- (ii) Plastic and aesthetic figuration,
- (iii) Relationship between architectural artifice and naturalness,
- (iv) The location in different districts of Riyadh to differentiate the selection range,
- (v) Award winners and/or for their prominent architectural features.

This study involved the direct observation on-site of the case studies depicted in Table 2 (three modern projects, one modern with a contemporary addition, and three contemporary projects) evaluated with a critical lens.

Table 2. The seven selected case studies.

	Building Name	Year	Status	Architects	Award/Relevance	Location
1	Tuwaiq Palace	1985	Built	Frei Otto, Omrania and Büro Happold	Aga Khan Award for Architecture, 1998	Al Safarat
2	King Fahd International Stadium	1986	Built	Ian Fraser and John Roberts and Partners	One of the largest stadium roofs in the world	Al Maizilah
3	Imam Turki Bin Abdullah Grand Mosque	1992	Built	Rasem Badran and Dar Al Omran	Aga Khan Award for Architecture, 1995	Ad Dirah
4	King Fahad National Library	1983 and 2013	Built	Gerber Architekten	Best architectural work in 2015 by global A+Award program	Al Olaya
5	Addiriyah Art Center	2015	Ongoing	Schiattarella Associati	- 2022 Rethinking the Future Awards: Concept (winner) - 2016 Iconic Award: Concept (winner) - 2016 American Architecture Prize: Cultural buildings (honorable mention)	Ad Diriyah
6	Al-Aredh Qasr Ceremony Hall	2018	Project	Schiattarella Associati	The complexity of the design that derives from the attention to the details, the working methods and the materials	Al Safarat
7	National Heritage Museum	2015	Project	Omrania	Innovative project without reproducing historical forms or relying on foreign models	Ad Diriyah

Through the selected criteria, this critical analysis aims to demonstrate how it is possible to construct new buildings by translating traditional architectural elements into a contemporary mode. An architecture attentive to place and history can represent an opportunity to rethink the constructive and aesthetic approach to provide guiding criteria

for contemporary architects who design in the rapidly expanding city. This research applied these criteria to interpret the results obtained.

The selected projects are located in strategic areas of the city, such as Al Safarat neighborhood of Riyadh, known as the Diplomatic Quarter (DQ), At-Turaif District in ad-Di' riyah, Al-Olaya in the center of Riyadh, the old town Ad Dirah, and the peripheral area of the stadium. The mapping of the seven case studies illustrates their location and distribution in Riyadh, differentiating between those built, those under construction, and the project concepts (see Figure 8).

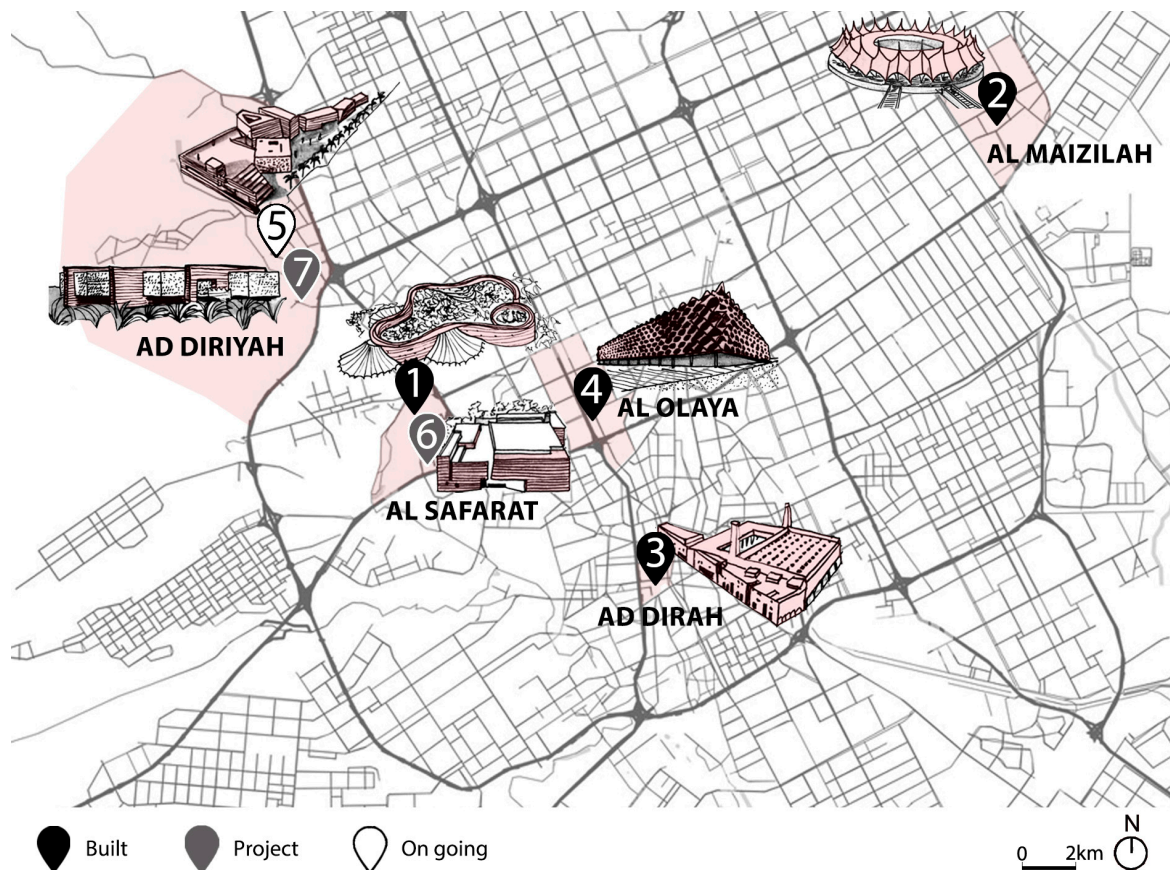


Figure 8. Case studies localization in Riyadh neighborhoods (Source: author).

3.3. Critical Analysis of Case Studies

The critical review of the case studies constitutes fundamental support for developing the guidelines by providing valid criteria to obtain an architecture attentive to the architectural space's formal, expressive, and figurative aspects.

Assuming that architecture is studied through other architecture, the analysis of the case studies will allow us to understand the relationship between traditional and modern/contemporary architecture. The acquisition of elements belonging to the past leads to their mastery and the ability to integrate them with the project.

3.3.1. Case Study 1: Tuwaiq Palace (1985), Frei Otto

Tuwaiq Palace was completed in 1985 in a joint venture between Frei Otto, BuroHappold, and Omrania & Associates; it represents an exemplary synthesis of Arab culture and heritage using innovative formal and contemporary techniques (see Figure 9). Therefore, the Tuwaiq Palace does not replicate the past but translates it into a contemporary mode firmly rooted in the present. The winner of the 1998 Aga Khan Award, it was initially conceived as a kind of diplomatic club with recreational facilities [28].

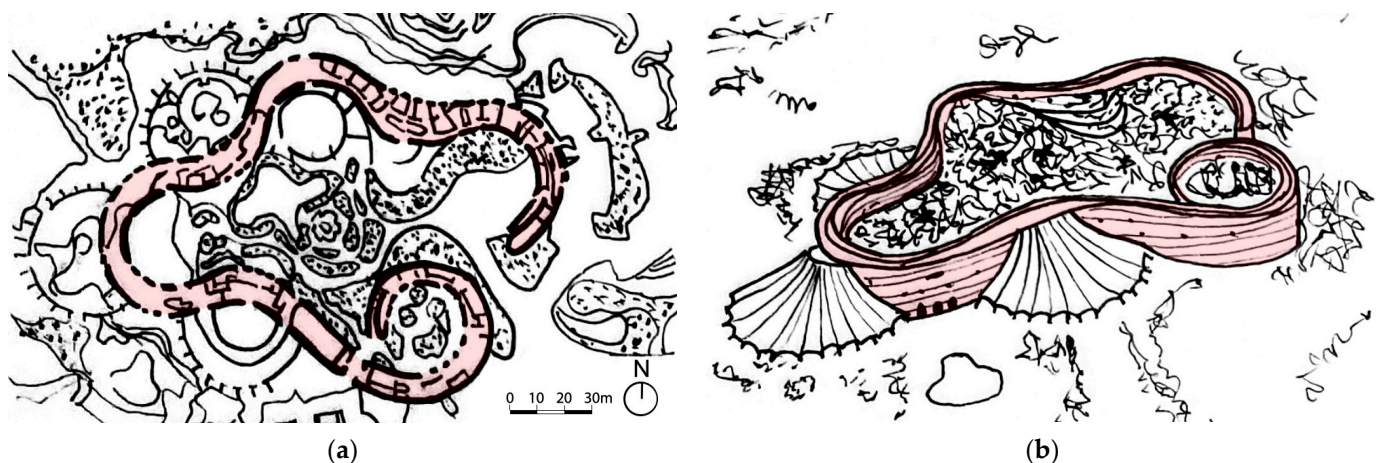


Figure 9. Tuwaiq Palace, Frei Otto (Source: Author): (a) ground floor plan of Tuwaiq Palace; (b) connection of the building with the surrounding environment.

1. **Compositive aspects.** The project refers to different elements of the traditional architecture of the central Najd region of Saudi Arabia. The plan has a courtyard typology that recalls the typology of fortresses of native architecture to preserve the privacy inside; the thick wall typical of vernacular architecture is translated here as a “living wall” made up of thick and rusticated stone walls. In addition, the small openings in the walls, typical of traditional architecture, are arranged along the facades to minimize solar gain. The use of the tent in the circular spaces along the livable wall is integrated here with the fortress typology, giving a modern twist to the traditional use.
2. **Plastic figuration.** The building has an organic and curved form; the wall is the absolute protagonist that defines its plastic and formal aspect. The 800 m long wall winds around itself, wrapping an oasis inside (Figure 9a). The strong formal aspect is contrasted by a series of constantly evolving interior spaces. Inside the wall, the users are encouraged to discover a variety of spatial and environmental experiences [29]. The spine along the building evokes the fortress with its mass, the local stone cladding, and the thinly scattered openings.
3. **Expressive value.** With its dynamic surfaces, the wall recalls the sand dunes created by the wind. The concrete walls covered with local Riyadh stone look like an extension of the surrounding desert and give the building architectural expressiveness provided by the porous surface typical of Najd architecture. The contrast between the heavy walls and the lightness of the Teflon fiber fabric curtains gives an expressive balance to the entire building.
4. **Context connection.** The unique design of the Tuwaiq palace integrates the two local archetypes, the fortress, and the tent, with the natural phenomenon of the oasis to create physical protection for the environment, with the idea of offering the only panoramic view from the building with the path practicable on the roof [30,31]. The idea of the landscape is to provide a contrast between the lush garden inside the wall and the arid nature of the rocky plateau outside that overlooks the Wadi Hanifa below and the city of Riyadh beyond. Even the sky is a strong element that characterizes the project inside the oasis. The palace seems to grow and rise from the rocky desert, becoming an integral part (Figure 9b).

3.3.2. Case Study 2: King Fahd International Stadium (1986), Ian Fraser

The multi-use stadium was completed in 1986 by architects Ian Fraser, John Roberts & Partners as a FIFA international football ground capable of seating around 70,000 spectators. The stadium is easily recognizable thanks to the large white sails supported by flagpoles, which form the covering tensile structure (see Figure 10).

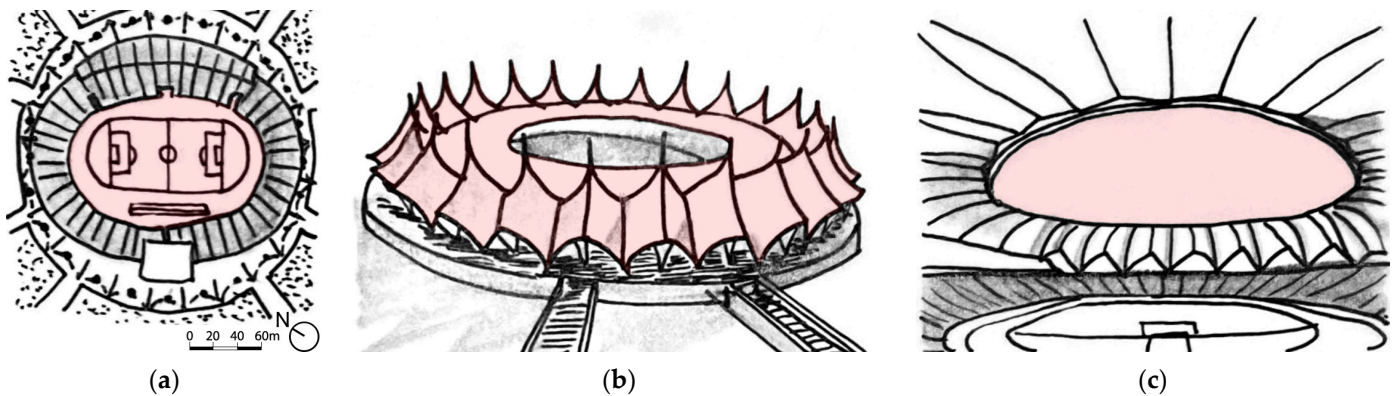


Figure 10. King Fahd International Stadium, Ian Fraser (Source: Author): (a) the central plan of the stadium; (b) the plastic figuration obtained by the umbrella roof; (c) connection between the stadium and the sky.

1. **Compositive aspects.** The stadium features a circular shape with a radius of 247 m (Figure 10a). This multi-use architectural typology lends itself mainly to sporting and cultural activities, configuring itself as an infrastructure for a dynamic, involved, and emotional crowd. The protagonist element of this architecture is the roof, considered the most extensive roof in the world despite its sizeable central opening. The roof reinterprets the traditional Bedouin tent with a technologically advanced roof construction consisting of a series of Teflon-coated fiberglass units in the shape of a tent supported by cables [32].
2. **Plastic figuration.** King Fahd Stadium is a work of art. The rich sculpture of the roof umbrella generates a plastic appearance caused by its sinusoidal shapes (Figure 10b). This structural system creates an efficient and pleasant space, as the curtains absorb warm air and sound [33].
3. **Expressive value.** The roof's steep folds, which comprise 24 tent units, give the exterior a powerfully expressive image to create a new visual narrative.
4. **Context connection.** The stadium is located in an arid and flat area northeast of Riyadh. The curtains that cover the stadium have a high iconographic value and are a point of reference for the urban landscape of Riyadh. Under the roof are single-tiered stands shaped like a bowl, mainly supported on artificial land slopes. The huge umbrella keeps the sun off the seats while providing shade and comfort in the hot desert climate. In this project, the sky plays a fundamental role, as the roof is open towards the top, creating a strong connection between the building, the sky, and the desert (Figure 10c).

3.3.3. Case Study 3: Imam Turki Bin Abdullah Grand Mosque (1992), Rasem Badran

The mosque has played a key role in meetings between scholars and students, which is why it is also called the Great Mosque of Riyadh (Figure 11). Designed by architect Rasam Badran as part of a revitalization plan for the historical center, the mosque houses around 17,000 worshippers. The mosque won the Agha Khan Award for Architecture in 1995 precisely for its innovative design and for the integration of the Najd architectural elements into the project, such as dimensions, sunlight and shadows, ventilation, and the different spaces. The mosque follows a methodological approach that can undoubtedly contribute to the design and the improvement in contemporary projects [34,35].

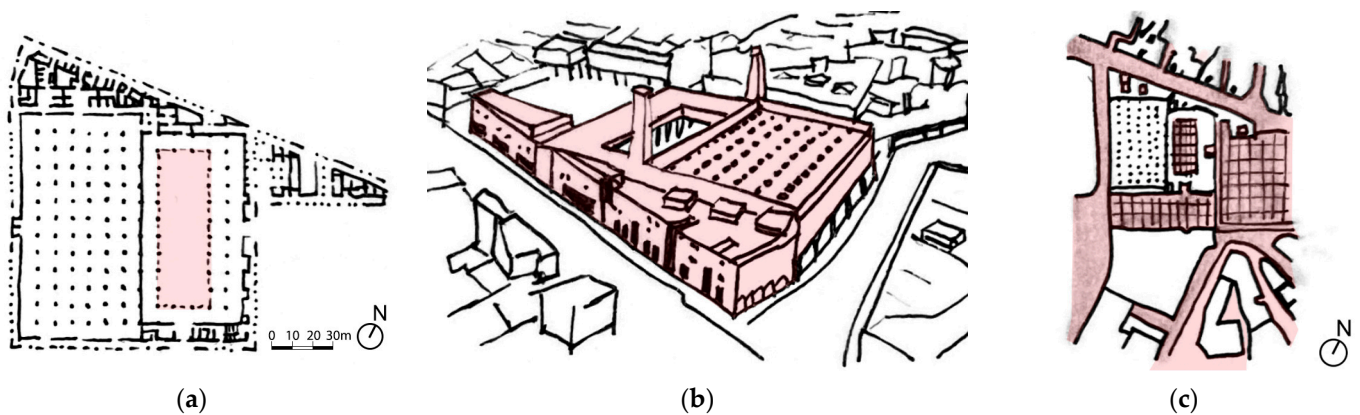


Figure 11. Great Mosque of Riyadh, Rasem Badran (Source: Author): (a) ground floor plan with the prayer room preceded by a courtyard; (b) compositions of masses with the two minarets; (c) connection with the urban fabric.

1. **Compositive aspects.** The mosque consists of a main prayer hall preceded by a 4800 square meter courtyard, which incorporates the courtyard's typology of traditional Najd architecture (Figure 11a). Columns, courtyards, and narrow passageways recall the traditional uses of space. Traditional spatial features are perfectly included, not copying the past but interpreting it [36].
2. **Plastic figuration.** The distinctive elements of the mosque are the two 50 m high minarets that rise on the north and south sides of the mosque. The minarets break the horizontality of the main volumes of the mosque, generating verticality to the entire composition of the masses (Figure 11b) [37].
3. **Expressive value.** The external walls are covered in local limestone, punctured by the small triangular openings typical of the Najd tradition. The openings create a further dialogue between past and present by creating a rhythm in the facade and bringing out the expressive character of the building of apparent simplicity. The relationship between the mosque and Al Masmak fortress is clear, where Rasem Badran takes up the idea of the wall as a transition space between the outside and the inside.
4. **Context connection.** The Great Mosque is located at the center of a group of public buildings in Riyadh's historic center. The center of worship is in complete harmony with the surrounding urban fabric rather than emerging as an autonomous element [38]. The idea of the wall as a separation between internal and external space, which derives from the nearby fortress of Al Masmak, is used as a metaphor and a principle for urban and visual composition. The alternation of solids (the prayer hall) and voids (the courtyard) integrate perfectly with the traditional Najd urban area (Figure 11c). The yard creates a suitable microclimate inside, reducing the temperature in the prayer room. Furthermore, the buildings clad by the local limestone walls make good thermal comfort.

3.3.4. Case Study 4: King Fahad National Library (1983)—(Addition in 2013), Gerber Architekten

The King Fahad National Library is located within a growing financial district north of the historic center of Riyadh, where the city's main contemporary skyscrapers are located. The building stands out from the heterogeneous urban building and is considered one of Riyadh's most important urban and cultural development projects. The peculiarity of this building is the integration between modernity and contemporaneity through the reinterpretation of the elements of the local Arab culture (Figure 12).

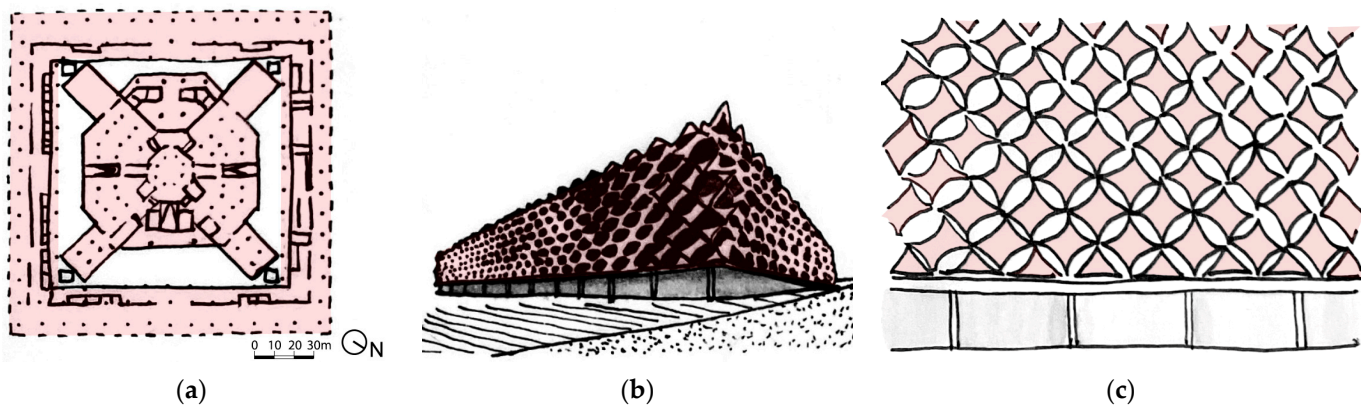


Figure 12. King Fahad National Library, Gerber Architekten (Source: author): (a) the cruciform plan enclosed in a “cube” building; (b) the plastic figuration of the diamond-shaped curtains on the facade; (c) the expressive value of the envelope composed by white membranes.

1. Compositive aspects. The original cruciform library building built in 1983 was enclosed within a square building plan. The result is a “box” within a “box”; i.e., the contemporary cuboid-shaped structure aims to protect the original library by integrating it inside (Figure 12a). The existing cruciform building, topped with a dome, which was reconstructed in steel and glass, is the cultural symbol of the library [39].
2. Plastic figuration. Despite an almost rigid and symmetrical plan, the library took on a plastic figuration by adding a new “skin” in 2013. The facade’s cladding is made up of diamond-shaped curtains, creating a play on the facade between solids and voids. The tents act as umbrellas, reinterpreting the tradition of the Bedouin tent innovatively and technologically (Figure 12b).
3. Expressive value. The white membranes that cover the four sides of the new library intervention create a unique style that characterizes the facades. The “skin” of the building achieves strong expressive value thanks to the three-dimensional aspect of the surface. At night, the building becomes the cultural beacon of the city through its changing colors (Figure 12c).
4. Context connection. The library site connects the capital’s main traffic arteries, King Fahad Road and Olaya Street. The building is located within an urban park also designed by Gerber Architekten, including the green areas. The library represents the iconographic center of a prestigious urban district undergoing expansion. The new urban plaza offers direct access to the library, creating a filter between the busy Olaya Street and the library. Furthermore, the filigree steel cable structure of the facades has a solar penetration level of only 7% and, at the same time, maintains a relationship with the outside, with the possibility of looking both in and out. The membrane facade has been optimized with the local solar path through a complex three-dimensional light refraction, combining sun protection with light penetration and transparency [40].

3.3.5. Case Study 5: Addiriyah Art Center (2015), Schiattarella Associati

The contemporary project of the Addiriyah Contemporary Art Center by the Schiattarella Associati studio has won two prestigious international awards: the Iconic Award 2016 (concept winner) and the American Architecture Prize (honorable mention). The project, entrusted in 2014 following an international competition, is now under construction (Figure 13). The architectural intervention integrates with the historical, cultural, and landscape context [41].

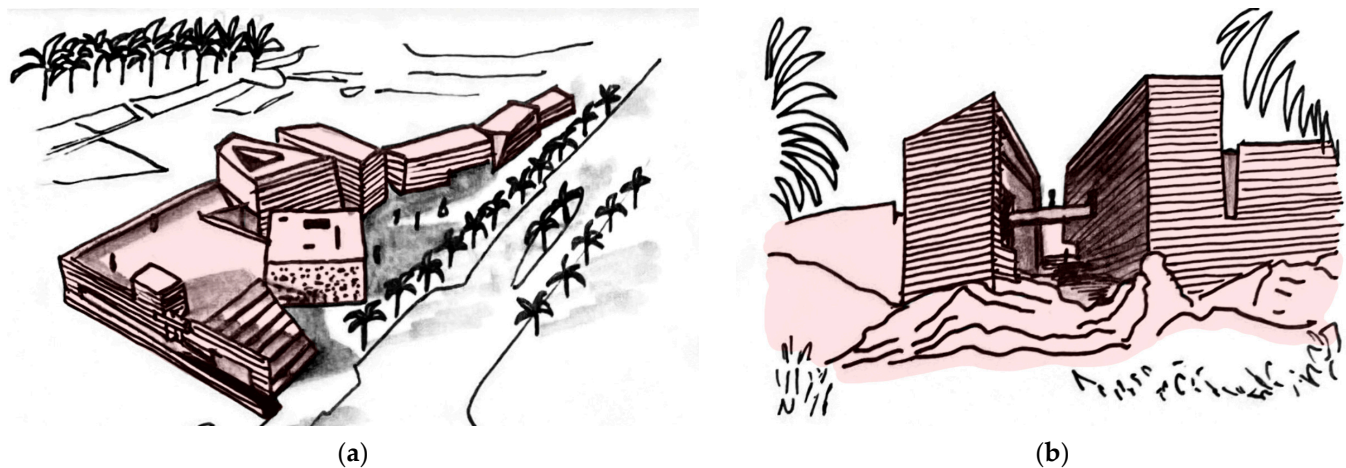


Figure 13. Addiriyah Art Center, Schiattarella Associati (Source: author): (a) composition of the volumes along a linear path; (b) a natural “podium” as a point of reference for the surrounding environment.

1. Compositive aspects. The project is an urban fragment connected to the rest of the city. The narrow streets between the volumes of the project recall those of the historic city of ad-Dir'iyah. As Schiattarella states, “... With an act of profound respect, we have chosen to start afresh from local cultural roots, working on the value of differences and thus studying materials, spatial organization, volumetric articulation, geometric complexity typical of the countries where we work. This method does not seek historicized linguistic solutions, but an entirely contemporary architectural dimension but an alternative to globalization's expression” [42].
2. Plastic figuration. The volumes of different shapes and heights are mainly articulated along a linear path. This linearity is broken by the irregularity and orientation of the masses, which create a harmonious composition, a balance between the project and the context (Figure 13a). Nature is the real protagonist of the project. The volumes are articulated according to the surrounding landscape; nature guides the building's form.
3. Expressive value. In this project, materiality is expressed by a difficult material to shape: the void. The empty space between the volumes of the building dialogues with matter and light. As Schiattarella says, “... the intervention of natural light is an explosive tool because naturally the light that penetrates the void marks and underlines the space making it constantly change, and therefore enriches the sense of architecture with infinite possibilities; it enters the depths in some way, it slides on the smooth walls, it stops on the walls, or it vibrates along the folds of the knurled walls” [42]. The mainly closed volumes have irregular openings of different arrangements and densities according to the internal function to modulate light entry. The side facing the landscape is underlined by horizontality through the horizontal and parallel incisions on the surface of the walls propped up by small irregularly shaped openings that capture the observer's attention.
4. Context connection. The relationship with the context is the dominant element of the project. The building is located on top of a natural escarpment on the border between the modern city and a lush natural area of green areas and palm groves, separated by the linear layout of the Wadi Hanifa. The building, therefore, acquires considerable importance as it is positioned on a natural “podium” and becomes a point of reference for the surrounding environment. The volumes, seen from the landscape side, emerge from the same rock they are located, creating a strong link with nature (Figure 13b) [43]. The Art Center, designed to be built with local materials, is well integrated with the surrounding environment, creating permeable alleys, staggered volumes of different heights, and good shading between the buildings.

3.3.6. Case Study 6: Al-Aredh Qasr Ceremony Hall (2018), Schiattarella Associati

Another significant recent project by Schiattarella Associati is the recent Al-Aredh Qasr Ceremony Hall project. The project focuses on the characteristics of the surrounding environment that have strongly contributed to the design idea, starting from the elements that distinguish Najd architecture, reinterpreted here in a contemporary key, creating continuity with Saudi culture.

1. Compositive aspects. The project is articulated in a composition of volumes of different shapes, sizes, and heights, organized along a central spine, which recalls the typology of the Arab Souq with the various masses flanking the central path (Figure 14a). Although the function here differs from that of the market, the central path is well suited to organizing the spaces appropriately, creating harmony in the project.

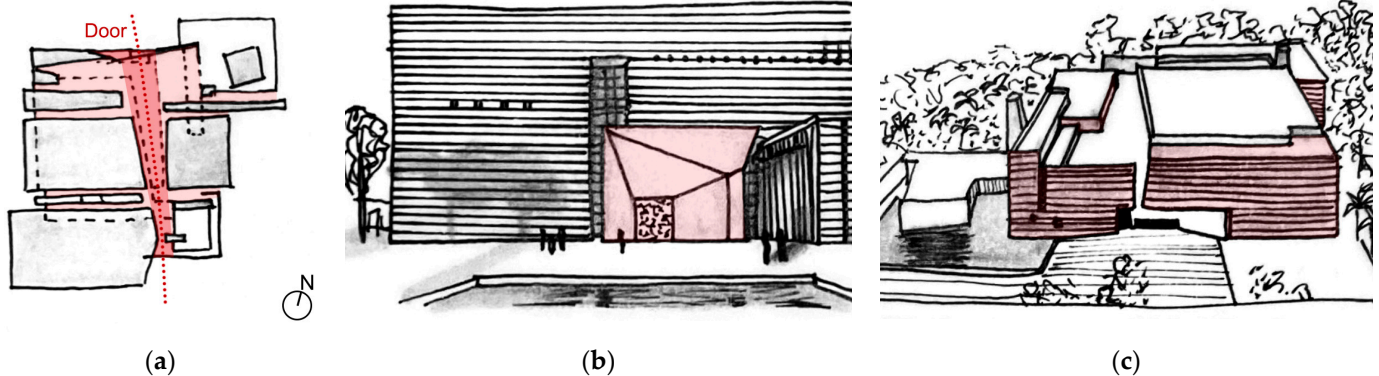


Figure 14. Al-Aredh Qasr Ceremony Hall, Schiattarella Associati (Source: author): (a) articulation of volumes along the central spine; (b) the door as the real protagonist of the main facade; (c) composition of masses well integrated into the territory.

2. Plastic figuration. The plasticity and malleability of the volumes create curious plays on the facades. The entrance is the real protagonist of the main facade. Here, the traditional Najd “Al-Bab” door is an essential visual element to guide the local population and identify its position, emphasized by sloping surfaces. The engravings of the traditional local door are here reinterpreted through a contemporary gold texture in relief (Figure 14b). Additionally, in this project, the past-to-present translation is not an imitation but a successful translation of the historical elements.
3. Expressive value. This project’s relationship between full and empty spaces plays a fundamental role. Each volume features such openings that recall those of traditional Najd architecture. The project exploits the natural light penetrating its masses to illuminate the interior spaces, creating a chiaroscuro effect. The material used respects the reference territory through Riyadh stones, creating volumes with unique colors and textures of surfaces.
4. Context connection. As previously mentioned, the project integrates the “symbols” of Saudi cultural identity and the meaning of the formal elements that reflect that identity (Figure 14c). The “horizontal” arrangement of the irregular masses respects the flat level of the surrounding land surrounded by palm trees [44,45]. The interplay between solids and voids on the facade of different shapes and sizes offers extraordinary climatic capacities by modulating the light inside the buildings entirely made with the local stone of Riyadh.

3.3.7. Case Study 7: National Heritage Museum (2015), Omrania

Omrania’s proposal for the National Architecture Heritage Museum is resolutely contemporary yet influenced by Najd architectural traditions (Figure 15). The design of this complex is inspired by the ruins of the old city of At-Turaif District in ad-Dir’iyah, a UNESCO heritage site, and its defensive walls.



Figure 15. National Heritage Museum, Omrania (Source: author): (a) a “comb” plan typology with thick walls as a link between tradition and modernity; (b) the rhythm between walls and light “boxes.”

1. Compositive aspects. The plan of the building presents a “comb” arrangement, composed of clearly divided served and serving spaces, creating a proportionate rhythm between the alternation of the transparent exhibition spaces with the “habitable” walls containing stairs and services. Thick walls link tradition and modern construction by translating the traditional walls of the city of At-Turaif into a contemporary key through “habitable” walls (Figure 15a).
2. Plastic figuration. The interaction between tradition and contemporaneity is played out in the relationship between the alternation of habitable walls closed with transparent and light “boxes.” The height of the walls, more significant than the exhibition spaces, brings out their importance as a reference to the past.
3. Expressive value. The rough surfaces of the walls integrate with the surrounding environment. The walls give the project an architectural expressiveness provided by the porous surface typical of Najd architecture. The contrast between the heavy walls and the lightness of “boxes” gives an expressive balance to the entire museum (Figure 15b).
4. Context connection. The design is inspired by the nearby ruins of Di’riyah, whose mud walls appear to have grown straight out of the ground, creating a series of heavy rammed earth walls. The arrangement of volumes and walls through a comb typology allows the building to merge with the surrounding landscape, providing views over the Wadi Hanifa [46,47]. The imposing partition walls were designed without openings to preserve the interior spaces from the arid climate, in turn shading the exhibition spaces by reducing their temperature.

4. Results and Discussion

The last phase of this research was to develop a comprehensive analysis of the seven previously described case studies through a comparative table (Table 3), which summarizes the fundamental elements of traditional Najd architecture reinterpreted in a modern and contemporary mode in the case studies analyzed through the four identified criteria: composition aspects, plastic figuration, expressive value, and context connection.

Table 3. Comparison of the case studies through the four parameters.

Case Studies		Criteria			
		Compositive Aspects	Plastic Figuration	Expressive Value	Context Connection
1.	Tuwaik Palace (1985), Frei Otto, Omrana and Büro Happold	Open courtyard surrounded by thick walls reminiscent of a fortress that encloses an oasis in the desert with tensile structure “tents”.	Organic and curved composition of the wall that winds around itself.	A smooth-flowing surface that resembles wind-crafted dunes. Expressive balance between mud walls and Teflon-coated fiberglass.	Garden oasis as a physical protection of the of the desert around it, and physical connection with the sky.
2.	King Fahd International Stadium (1986), Ian Fraser	Central plan covered along the perimeter with a tensile structure roof reminiscent of a Bedouin tent.	The rich sculpture of the roof umbrella generates a plastic appearance generated by its sinusoidal shapes.	The roof’s steep folds give the exterior a powerfully expressive image to create a new visual narrative.	The roof creates a strong connection between the building, the sky, and the desert, providing shade and comfort in the hot desert climate.
3.	Imam Turki Bin Abdullah Grand Mosque (1992), Rasem Badran—Dar Al Omran	Open courtyard preceding the main prayer hall.	The minarets break the horizontality of the main volumes of the mosque, generating verticality to the entire composition of the masses.	Small triangular openings create a rhythm in the facade and bring out the expressive character of the building of apparent simplicity.	The alternation of solids and voids perfectly integrates the Mosque with the traditional Najd urban fabric. The yard creates a suitable microclimate inside.
4.	King Fahad National Library (1983)—Addition building in 2013, Gerber Architekten	Cruciform plan enclosed within a square-plan building. The result is a “box” within a “box”.	The tents on the envelope act as umbrellas reinterpreting the tradition of the Bedouin tent in a modern, technological way.	The “skin” of the building achieves a strong expressive value thanks to the three-dimensional aspect of the surface.	The membrane facade maintains a relationship with the outside, with the possibility of looking both in and out. It combines sun protection with light penetration and transparency.
5.	Addiriyah Art Center (2015), Schiattarella Associati	Urban fragment connected to the rest of the city.	The harmonious composition of the irregular masses creates a balance between the project and the context.	The materiality is expressed by a difficult material to shape: the void: the space between the volumes.	The building is well integrated with the surrounding environment, creating permeable alleys, staggered volumes of different heights, and good shading between the buildings.
6.	Al-Aredh Qasr Ceremony Hall (2018), Schiattarella Associati	The volumes are organized along a central spine which recalls the typology of the Arab Souq.	The plasticity and malleability of the volumes create curious plays on the facades.	The Riyadh stones creating volumes with unique colors and textures of surfaces.	Integration of the surrounding context starting from the “symbols” of Saudi cultural identity.
7.	National Heritage Museum (2015), Omrana	A “comb” arrangement plan with thick “habitable” walls deriving from the ancient walls of the At-Turaif district.	Alternation of the heavy walls with light “boxes”.	Rough wall surfaces alternate with a rhythmic series of glass light boxes.	The walls preserve the interior spaces from the arid climate shading the exhibition spaces by reducing their temperature.

As seen from the table, the projects analyzed capture the architectural typologies of the past through a “translation” rather than “transfer” approach to define the formal choices of the building and the composition of the spaces through the integration of history and culture [48]. For example, the reference to the central courtyard of the housing typologies and the fortresses is highlighted as the fragmentation of the buildings typical of the historic fabric, the thick earthen walls of the Najd architecture, and the Bedouin tent used as a shading element. This operation shows how the past can and must be adopted in the present without being identical to the traditional architectural model.

Each of these projects shows a well-defined aggregation of volumes. The perfectly marked and well-articulated shapes make the project harmonious and monumental. The plasticity of the volumes and the malleability of the surfaces are evident. The play of solids and voids of the masses creates a balanced composition between the project and the surrounding environment. The volumes show an expressive character through the materiality and their porous surfaces typical of Najd architecture. The contrast between the use of local materials, such as raw earth, and contemporary ones gives an expressive balance in the composition of the masses. The buildings are well-grounded and rooted in their site.

The analysis of the projects shows that their methodological design process is strongly influenced by the superior design of the landscape, almost as if to protect it, in the case of the Tuwaiq Palace, where the landscape is enclosed within the walls to represent an oasis in the desert, or, in the project of the National Architecture Heritage Museum, where the walls of the building represent “arms” that extend towards the landscape. All case studies show innovative and contextual architecture responding to the local culture and climate.

The study was limited to a critical analysis of some symbolic projects, but the research could be extended to other significative architectures in which this cultural continuity between past and present emerges to obtain broader comparative results.

The goal is to devote oneself to creating an innovative and contextual architecture, even if few projects better reflect this aspiration identified by the case studies analyzed. This topic is crucial when new architecture is built in Saudi Arabia because the national heritage is deeply rooted in the country’s history [49]. An effort should be made to design in a contemporary vernacular that carries forward the architectural traditions of the Kingdom without reproducing historical forms or relying on foreign models.

5. Conclusions

This concise and schematic overview of the architectures selected in this article may contribute to rethinking a contemporary project’s methodological process right from the planning stage. The goal is to create continuity between past and present through the search for identity without “falsifying” history or being “identical” to tradition. Designers should be aware that a project begins by acquiring historical notions and local culture and studying the reference context’s climatic situations. The architect becomes a mediator between the physical transformation of the territory and the collective interest. Once the knowledge of the past is acquired, it will be possible to define solutions to a contemporary problem. This knowledge will provide an essential basis for integrating the principles of vernacular architecture into modern design, leading to more resilient buildings adapted to the needs of the inhabitants and local conditions [50].

This contribution reflects on the possibility of building contemporary architecture, highlighting their expressiveness and figuration in the architectural language, finding a strong connection with the surrounding landscape, and using local resources. Creating an architecture that is both innovative and contextual is the key to this study.

In recent years, in the rapid expansion of cities in the Middle East, specifically Riyadh, Western models have been adopted that do not relate to the traditional historical style. These new ways slowly eliminate any diversity of styles and cultures, losing the place’s roots. The study of this paper aims to contribute to Saudi Vision 2030 and strengthen the cultural aspects of the Kingdom through architectural design. The national identity should

be promoted not through imitating the past but rather through the translation the elements of the past into a contemporary key. Saudi Arabia will become one of the main destinations for international visitors; therefore, it is necessary to strengthen the cultural identity in the design of new architectures that also respond to aspects of sustainability through the use of local resources: a combination of cultural continuity and technological progress towards a sustainable culture to achieve cultural sustainability, and an architecture that expresses beliefs, morals, and methods together [6].

The aspects of composition, plastic figuration, expressive value, and context connection are the four principles that every designer should remember during the design phase to achieve an architecture that integrates into the reference context. This methodological approach does not seek historicized linguistic solutions but an architectural dimension that is entirely contemporary but an alternative to that expressed by globalization [42].

The architectural experiences identified in Riyadh allow us to outline some generalizable attitudes to define new construction procedures according to an aesthetic and constructive approach. The way the architects intertwined traditions with modern technologies in their design was fundamental to obtaining functional, sustainable buildings while showcasing cultural continuity. These guidelines represent an opportunity to rethink the project's methodological approach for Saudi Arabia or the Middle East and any new architectural project located in a context-rich local history and culture. Standardization does not always lead to optimal results. Still, it must be integrated with local building systems and resources to enhance tradition and context through a plastic figuration of the architectural space.

This article invites other scholars to investigate how the past and present coexist in contemporary architecture. As the analysis further suggests in this research, what is still missing is not only recognizing the past but defining a methodological guide linked to the valuable conceptual process to architects to be able to apply it in the practice of contemporary architecture in a context of reference to the past.

Funding: This research received no external funding.

Data Availability Statement: Not applicable.

Acknowledgments: The contribution is part of the Sustainable Architecture Lab (SA Lab). The author would like to acknowledge the support of Prince Sultan University for paying the Article Processing Charges (APC) of this publication.

Conflicts of Interest: The author declares no conflict of interest.

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