The Values of Identity in Contemporary Architecture in Saudi Arabia

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Abstract: In the framework of an international increasing experimentation on sustainable buildings that overlaps the fast development of Saudi society in terms of "race to the construction of an international metropolis", depicted by large investments in architectural elements to be seen as symbols of the culture renewal and openness to the world, one of the most necessary objectives to be focused on and, probably, Saudi contemporary architecture most important challenge is figured in the research of an image coherent with the own local expression to become, at the same time, demonstration of innovation and experimental investigation on the language and technologies to be used. This research of a language as an expression of contemporary architecture should be rooted on the understanding and reinterpretation of the local identity based on a detailed knowledge of history, customs, environment and construction forms to allow the definition of the principles that we can call "core" of local architecture. These invariants, timeless tangible and intangible attributes which can be found within the historic urban fabric of a city, should be at the basis of the formulation of a new contemporary language that is faithful expression of a culture in evolution but linked to its roots in order to respect the sense of belonging and the coherence with their own traditional culture, with all the different facets grown up from the foundation of the city, through a renewed formal expression. Following a methodology based on the development of a conceptual approach capable of providing operational knowledge to be integrated into the contemporary architectural design process, new directions to combine principles of traditional sustainable architecture with technological innovation have been experimented on landmark buildings: Ministry of Municipal and Rural Affairs and Housing, Diriyah Art Futures (Riyadh-Diriyah, Najd region) and Culture Square (Jeddah, Hejaz region), whose design aims to demonstrate that the study of characters and vernacular landscapes in terms of composition, performance, technology and materials in particular extreme climatic and environmental situations can be part of a unique strategy to raise awareness among the Saudi population in reference to the sustainability and respect of each cultural identity.

Keywords: Cultural Identity, Saudi Contemporary Architecture, Najd Architecture, Hijazi Architecture, Historic Urban Fabric, Evidence-based Design.

Introduction

In the framework of an internationally increasing experimentation on sustainable buildings that overlaps with the rapid development of Saudi society in terms of a "race to the construction of an international metropolis", large investments in architectural elements are

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DOI: 10.36158/97912566918218

seen as symbols of a renewal of culture and openness to the world, one of the most necessary objectives to focus on. Nowadays, contemporary Saudi architecture's most important challenge is the search for an image coherent with local expression displaying, at the same time, innovation and experimental investigation on the language and technologies to be used.

In the Arabian Peninsula, climatic and environmental influences are strongly linked to social and cultural traditions, and this relationship is intrinsic to local identity. The frequent invitations of the country's leadership institutions to international firms to develop creative prototypes expressing identity through architecture show a clear desire to lead the past into significant elements of the present, translating the contrast between the country's modernity and tradition into an architectural language. This is an opportunity to bring global attention to the development of an architectural style, which, by creating a strong link with the tradition and cultural identity of the Saudi Arabian people, will lean towards the future, highlighting innovation within its own nation and representing Saudi heritage to the world.

1. Aim and Methodology

1.1. *Aim: Research for a Language of Expression for Saudi Contemporary Architecture*

This research for a language as an expression of contemporary architecture needs to be rooted in the understanding and reinterpretation of local identity in terms of society, culture and environment, based on a detailed knowledge of history, customs and built forms of specific areas, to allow the definition of a group of extrapolated principles that we can call the "core" of local architecture.

This develops into a threefold aim:

1. Conceptual: Establishing a useful framework of keywords and principles to define a clear direction for this evolution.
2. Methodological: Developing an architectural method which evolves from the roots of Saudi tradition and highlights its intrinsic and intangible characteristics, helping designers to explore the transition from historic to contemporary and to suggest different options of progression in new future-focused styles.
3. Formal: Enabling designers to formulate a new 'language' for contemporary architecture based in Saudi specificity, expressing the character of each region, yet allowing for variations and creativity, but with a lexicon able to connect with the traditional language of architecture, as a natural evolution.

1.2. *Method: Extrapolation of Tangible/Intangible Characters that Form the Core Principles, towards a Contemporary Language*

Invariant, timeless, tangible and intangible attributes found within the historic urban fabrics, are the basis for the formulation of a new contemporary language: faithful expression of an evolving culture, deeply linked to its roots, sense of belonging and coherence with its tradition.

> By identifying the process of making that led to shaping the characteristics of built environments in the Najd region, it has enabled the development of understanding beyond the physical appearance and discovering the processes that generated the urban and architectural forms and defined their visual shapes. This understanding can serve to increase the awareness of and appreciation for local architectural identity as a process, not merely as a final product (Alnaim, 2020: 11).

If physical elements are essential in defining an architectural style, simply repeating them cannot achieve effective results. Instead, the key to success is understanding the characterization of these physical elements to reach the original spirit and enucleate the core concepts underpinning the architectural form, deeply associated with socio-cultural meaning, the natural environment and local building materials and techniques. By understanding and identifying the production and reproduction of the Saudi Core Principles, we can understand the "hidden order" that guides the configuration of its architecture.

Each region of the Arabian Peninsula has its own geographical peculiarities and historical/social evolution that led to a different outcome of built form, with its own recognizable features, patterns and colours. Nevertheless, there are some underlying aspects of the architecture that trespass regional borders and can be recognized as "Saudi".

This research, beginning with the study of geographical and climatic-environmental features, social institutions, and religious principles and evolving into a method for reading building structures that have appeared in the past as 'spontaneous consciousness' (Caniggia & Maffei, 2017), in a progression of scalar sizes ranging from buildings and clusters of buildings to urban organisms and the territory, has allowed to reconstruct the conceptual thread linking the apparatus of responsive behaviour to the formulation of the built environment.

The result of this investigation is the definition of a series of architectural characteristics that must be verified to express the traditional, embedded process of building. These characters can be summarized as a comprehensive approach to urbanism and architecture, responsive to the site in terms of architecture, functionality and inherited culture generated by strong social co-creation. Originally based on human values and the human scale, and simultaneously functioning as a catalyst for social life, this set of features shapes a complex pattern through the aggregation of simple elements, with double formal readings and functioning standards ruled by an environmental control strategy, by phenomenon observation and collective knowledge.

2. Invariant Characters / Core Principles of Saudi Architecture and Their Application on Case Studies

2.1. *Invariant Characters of Najdi Architecture*

Located in the very centre of the Arabian Peninsula, the Najdi region (with Riyadh as its capital City) is surrounded by thousands of kilometres of inhospitable desert, therefore Najdi architecture is based on a careful use of local resources in extreme competition with nature. Urban settlements have fundamental principles of coexistence with the environment, and architecture is developed as a structural artwork designed to respond to the extreme climatic conditions of the central Saudi region desert, taking advantage of the unique microclimate generated in the oasis.

Each formal feature of Najdi architecture is responding, primarily, to an environmental input and to a social necessity of improving the living conditions of the inhabitants. The environmental and social responsibility is the implicit principle of the physical appearance and technological development of Najdi architecture.

Massiveness

Najdi architecture achieves a continuous wall illusion through compact forms and material mass emerging from the earth (such as earth bricks and stone) that resist compression. Thick walls provide thermal insulation, while narrow openings ensure privacy and limit solar ra-

diation. The agglomeration of simple volumes generates complex dynamic structures while maintaining a domestic-scale management.

Porosity and Permeability

Architectural processes generate urban spaces by orchestrating building volumes around voids (courtyards), employing varied forms and subsequent expansions. Clusters of buildings shape the urban fabric, carving pathways and underlining social hierarchies. Public to private transitions are guided by physical cues such as doors and bridges, fostering a maze-like feeling. Design features like bottlenecks, zigzag routes, colonnades, and setbacks foster shaded public areas. Buildings lead to courtyards animated by recesses, porches and sculpted levels, displaying a distinct section on each floor. Through human-scaled outdoor areas, seamless indoor-outdoor continuity, and vertical-horizontal interplay, courtyards emerge as rich urban spaces.

Social Factors

Saudi cities function as cohesive organisms, embodying an interconnected fabric as a living entity providing protection from the hostile desert. Quranic principles shape social self-regulation, guiding remote desert settlements. Urban density arises from the need for social and environmental safeguarding. The homogeneous urban appearance is punctuated by primary mosques and palaces, formed through straightforward aggregation.

Continuity of Space

Urban settlements appear as uniform clusters of volumes, organized within a tree-shape irregular urban pattern. Like the stratification of masonry construction, the building fabric is formed by serial additions of elements and structures determining a visual continuity in

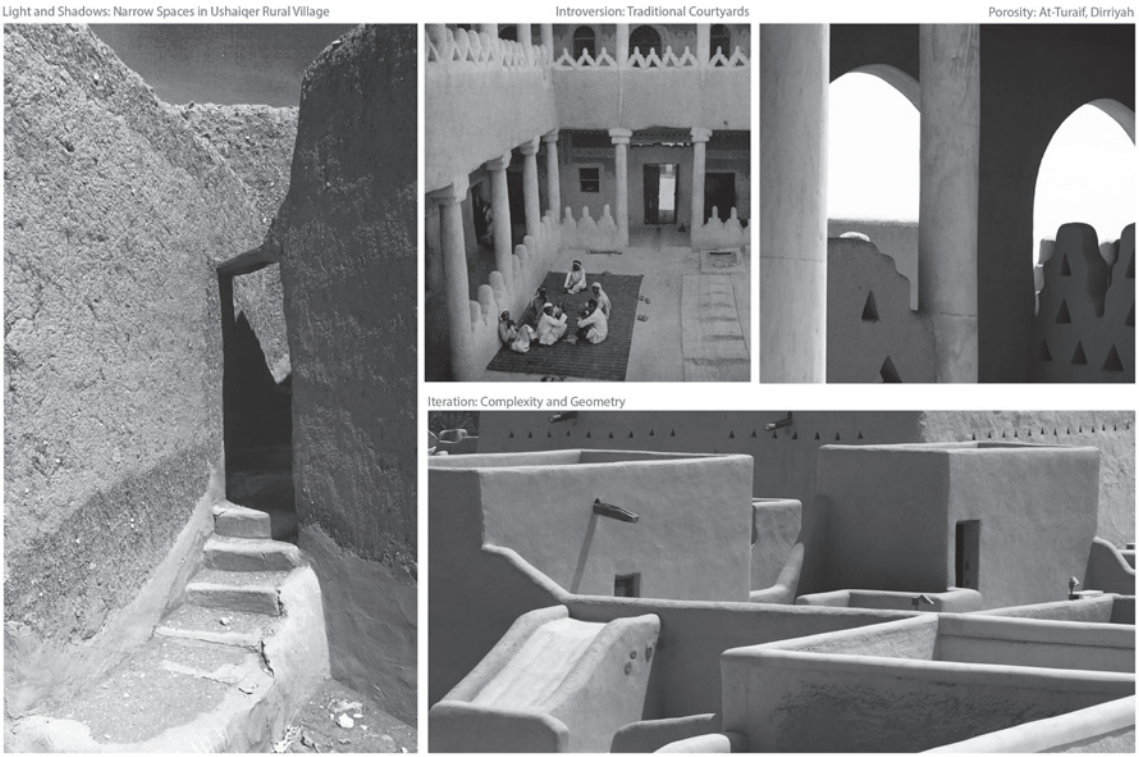

Figure 1. *Najdi Core characters.*

public and private areas. In all aggregations the fabric experiences moments of discontinuity such as knots or poles, generating unexpected visual and physical interconnections. People flow smoothly from private to public spaces naturally, guided by the widening and/or tightening of streets.

Environmental Mimeticism

Buildings harmonize with their surroundings using local materials and colours. Sourced from the site, materials integrate the structure with the earth. Resource constraints require energy efficiency. Built on natural slopes with minimal disturbance, the cities blend into the desert landscape, reducing visibility. Native knowledge and materials like mud offer insulation, durability and sustainable design, supporting living conditions, vegetation, water control and airflow.

Introversion

Buildings ensure privacy, merging buffers with indoor spaces. Volume distribution and internal design revolve around courtyards: the breathing core of each building, preserving intimacy and combating aridity. Courtyards mimic oasis dynamics, inviting cool night air and expelling heat during the day, offering protected outdoor spaces for daily activities.

Iteration

Buildings' intricacies spring from simple quasi-modular volumes, using scale and sequence to elevate architectural qualities. Material treatments create geometric patterns as sole decorative elements on plain facades. Like Arab music's repetitive themes, Najdi structures prefer serial compositions, downplaying node hierarchies.

Light and Shadow

The interplay of deep light and shadow defines the buildings' volumes and pathways. Narrow streets in mud-walled structures cast profound shadows, contrasted by sunlight on adjacent facades. Patterns in mud plastering and limestone contribute to this effect. Bridges, arcades, and parapets protect against glare and heat, enabling activities in shaded spaces.

2.1.1. Case study: Digital Art Center

Positioned on a hill's slope, once part of the historical city, signifying the limit of the agricultural landscape of palm groves of Wadi Hanifah and included in the UNESCO buffer zone of At-Turaif, in the old city of Diriyah, the project of the Diriyah Digital Art Center aims to create a focal point for the development of digital art within the community of Saudi Arabia as part of the redefinition of the Diriyah territory.

As an art incubator of 12.000 square meters, it is intended to be a laboratory able to train artists performing their activities and arrange, assist and support operators (artists, critics, technicians...), facilitating their interactions and experience exchanges, while acting as a show case for their production.

The architectural configuration dislocates volumes and generates a new urban fragment by creating a path network of small outdoor squares intertwined within the buildings. Each individual architectural component is dictated by the natural configuration of the existing site, with boundaries defined differently on the city-facing side and the side facing the

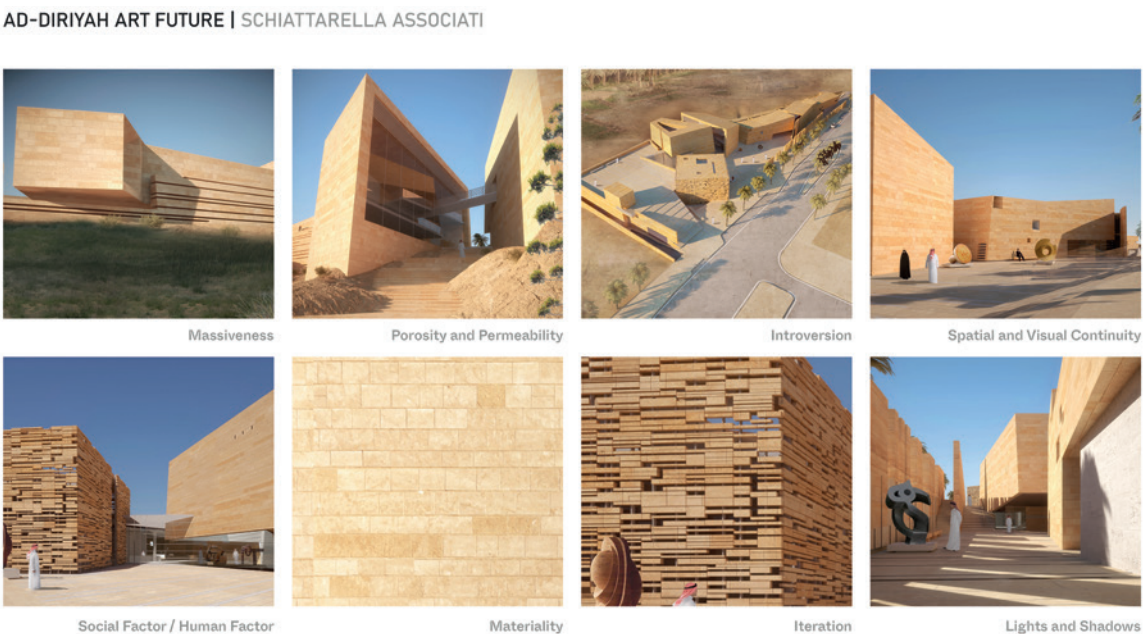

Figure 2. *Diriyah Art Futures case study: main characters.*

natural wadi and the rising terrain. The narrow and elongated shape of the plot allows the articulated morphology of these elements along the slope and reconnects them in a shared underground level.

Two main squares, placed at different levels along the slope of the main road giving access to the plot, offer functional distribution and separated accesses with different privacy levels: the lower square is intended to receive workers and residents (artists, students, teachers, administration staff...) and the upper square constitutes a public meeting place giving access to the exhibition gallery, retail area, educational spaces, conference room and restaurant.

A limit is placed on the east side, along the wadi, in the same position where the historical urban settlement ended (the ancient boundary of the city walls is clear, even if almost completely demolished). On this margin the sense of a border between the old urban settlement and the agricultural territory is reproposed, similar to the defensive wall but through a different approach.

On the other side, to the west, the limit is more permeable, inspiring continuity with the past through a sense of fragmentation and an interrupted relationship, by using a sequence of partial rammed earth walls that allude to the remains of an urban elevation, which dissolves while providing shade to the open areas.

Internally, small courtyards and crossing views distribute the light from narrow skylights protected with brise-soleil, mitigating the brightness of direct sunlight with discontinued shadows, and highlighting the colors of the mud plaster and Riyadh yellow stone walls that characterizes the internal environment, linking it to the traditional patterns and colors.

The elements' aggregation respects the natural vocation of the surroundings and creates visual and physical connections, not only through the massive volumes of the complex, but also between the city and the land of the wadi, through the open areas integrated in the project.

2.1.2. Case study: Ministry of Municipal and Rural Affairs New Headquarters

Located in a central and crucial position of Riyadh, immersed in a beautiful palm grove and just beside the existing MoMRA building in Olaya, the new headquarters of over 60,000

square meters shall provide both new workspaces and common facilities, improving the capacity of the Ministry of Municipal and Rural Affairs and the quality of its office environment. The new building is meant to be a flagship building for the Municipality, for its excellence in energy performance, water consumption and environmental quality for workers, aiming to be certified with LEED Gold.

The intent is also to open the quarter to the city: a conference centre and an expo area for the municipality's work to be shared with the public, while preserving the existing palm grove and converting it into a public park; the project includes in its functional program a pedestrian square and a commercial building for future private investors.

The idea leading the project is to realize a small fragment of a traditional Saudi town, with its complexity, as an urban fabric made of small volumes framed into each other, in-between passageways, narrow roads, small squares, courtyards. Buildings are mostly closed and inward looking with few external breaches; spaces between buildings are narrow and complex. Courtyards filter sunlight and aim at air cooling through shading systems, fountains, and vegetation.

Design intents to make voids as primary elements of an urban space configuration which, like a sculpture, will articulate the set of volumes that make up the building, both in plan and section. A ribbon of paths constitutes the main feature of the space, giving birth to a set of narrow spaces, where the wind is channelled, while neat volumes shape the light and shadows in the courtyards.

Materials and patterns are inspired by Najdi tradition, alternating solid yellow Riyadh stone with brise-soleil elements that open the façade to the views of the beautiful palm grove surrounding the building.

In the interior, the crossing views help to create spaces continuously penetrated, generating an intriguing complexity. The main lobby is conceived as an urban space, as the inner part of the public square, the paving and other finishings are the same as the exterior ones, ensuring continuity, to make it appearing as paths that enter the building from this "inner square" depart in the same way as streets penetrating the urban fabric.

The contemporary language of interior patterns and textures is inspired by the linearity of the geometric forms found in the decorated wooden doors and the vibrant shadows cast on the walls by palm leaves, applied to a variety of contemporary materials.

The landscape strategy is strictly linked to the desert environment, where the "garden" takes on a special importance and symbolic meaning. The design aims at reproducing the

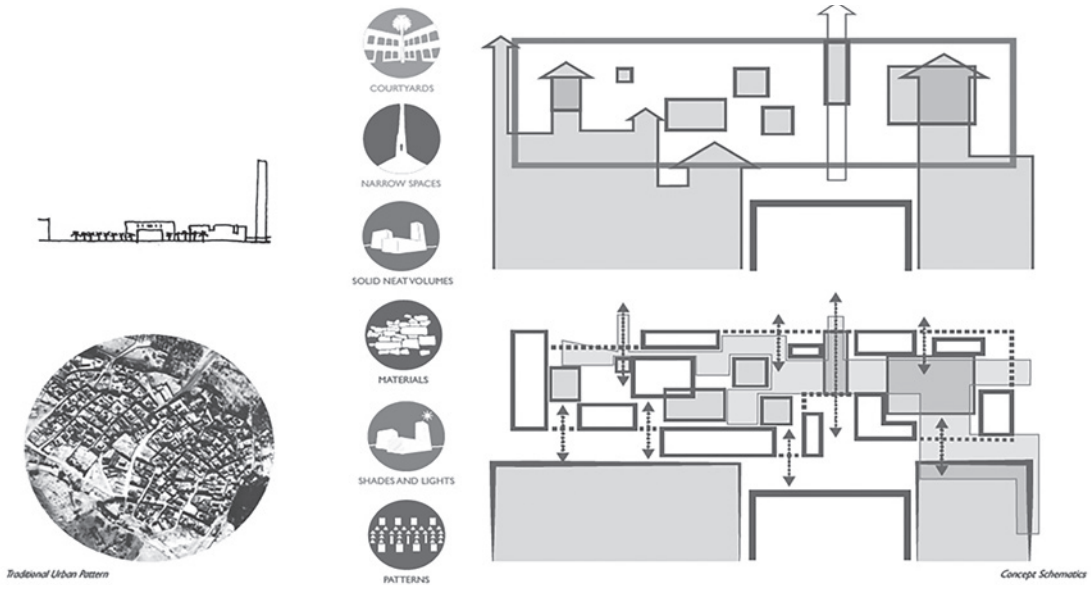

Figure 3. *MoMRA case study: concept scheme.*

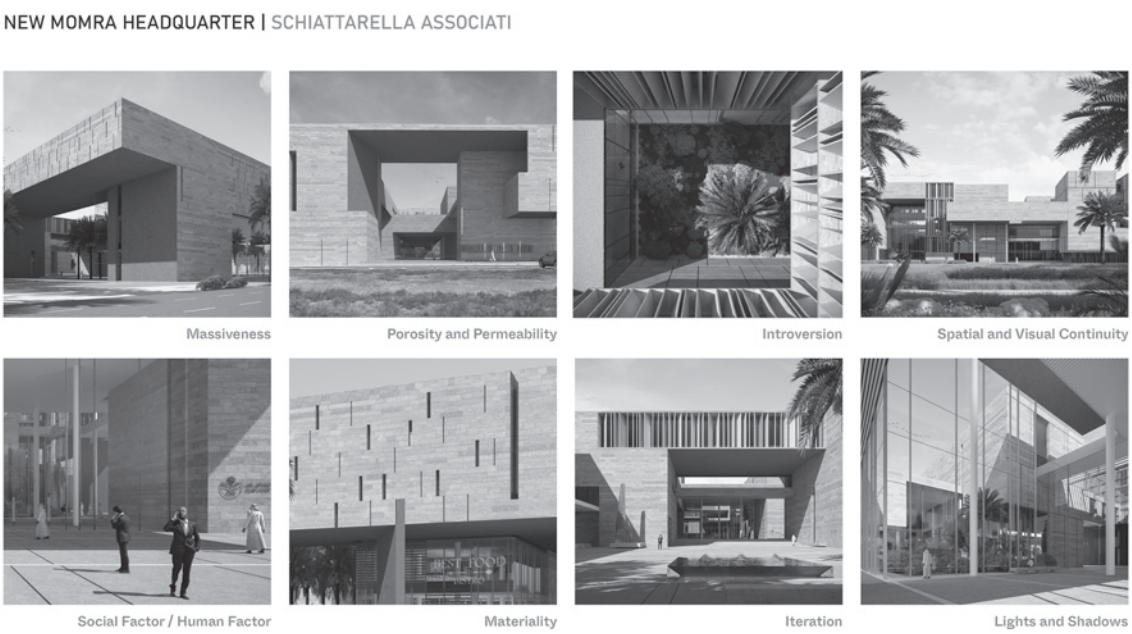

Figure 4. *MoMRA case study: main characters.*

oasis environment, almost always determined by a complex system of strategies that foresees water consumption reduction, microclimate regulation and protection from sandstorms.

To cope with the climatic condition of the Saudi region securing indoor comfort without wasting unnecessary energy, the passive behaviour of the building has been analysed from the very beginning of the design process. By controlling the shape of the building, it is possible to control solar gains and avoid the overheating of external facades, enhancing its performance and maintaining high-quality psycho-perceptive comfort standards as well as channeling prevailing winds to cool the facades by inducing a convection effect and combining natural and mechanical ventilation for the air cooling of the building.

Courtyards are used as in-between spaces that filter sunlight and aim at air cooling through shading systems, fountains and vegetation for evapotranspiration and convection effects. Exterior massive walls, small openings and compact volumes enhance thermal inertia and reduce heat gains.

2.2. *Core Dualities of Hijazi Architecture*

Differing from the principles of Najd area, Hijazi society, with Jeddah as the main example, thrives on contrast. Jeddah's history mirrors its mercantile nature, marked by fluctuations and adeptness at finding equilibrium amidst diverse forces. As a consequence, the definition of its character is identified mostly through dualities rather than singular concepts, as certain attitudes or operational principles that are intrinsic to Hijazi society can be glimpsed not only through individual conditions, but also in the tension that exists between them. As a mediator and gateway for internal areas such as Makkah, Jeddah's evolution from a fishing village to a Red Sea trade hub illustrates its essential role, which finds relevance in its own dependence on wider contexts, evident both in times of prosperity and decline.

Porosity/Filtration

Porosity characterizes the coral stone foundation of Jeddah. Homes exhibit this through room distribution and cage-like systems for airflow. Open spaces exemplify continuity and

sea breeze circulation, seen in the historical tall houses' disrupting paths. Jeddah, reliant on trade, maintained an open yet controlled connection to the world. Filtration maintains human encounters, preserving privacy and virtue through the dialectic of "haram" and "halal". Thresholds, often doors or Mashrabiyya, symbolize this filtration.

Order/Spontaneity

In the Al-Balad district (the historical city center), architectural contrasts are evident through juxtaposing formal and informal elements. Urban order arises not from rigid geometry, but from its natural landscape and mercantile logic. City planning references the mountain-sea terrain and an efficient street layout while spontaneous aggregations in various districts conceal a subtle, adaptable order, reflecting a desire for communal change over time, grounded in respect and coexistence.

Flow/Anchorage

The city's vitality comes from the flow of inhabitants, pilgrims and goods. Other than typical vehicular traffic, this energy is evident in public areas. Iconic spaces include souqs aligned with movement and trade. Contrasting these are Barahat, enclosed areas for communal activity. Neighborhoods, dynamic crowds, varying scales and enchanting musharabiyya alternate with serene corners shaded by tamarind trees, where artisans rest amid everyday architecture.

Permanence/Transience

Maritime commerce embodies dynamic cultural exchanges and encounters. The urban structure is fluid, continually dismantled and rebuilt, adapting through time with grafts for functional efficiency. Even if accelerated under the pressure of information, the city's life maintains an immutable core from its inception, combining the natural morphology and the inhabitants' consciousness interwoven in the city's layers, elements which should persist in any future project for the preservation of architectural identity.

Locality/Eclecticism

A deep connection to the landscape has historically inspired Hijazi architecture, which embraces the world's cultural influences while retaining its coherence. A syncretic, adaptive architecture arises, though in recent years we have seen caution replaced by superficial novelty, leading to an eclectic array of self-referential and alien styles, disregarding function and architectural identity.

Verticality/Horizontality

Caravans along Incense routes introduced the tower-house style to Hejaz and Asir from Hadramaut peasant societies. The design's success resulted from modifications like floor specialization. Ideal for merchant families, tower-houses protected goods and allowed integration with bazaars in easily manageable units which created cluster aggregations well aligned to tribal divisions. Architecturally, this model preserves individuality, which matches the mechanics of modular iteration, but accepts clustering in rows along pathways or around open spaces, historically used for agricultural functions. Recent

times have seen unchecked high-rise development, compromising the urban fabric and open spaces.

Spirituality/Worldliness

Jeddah's merchants prioritize pragmatic profit, leading to a straightforward life philosophy. The tower-house type, iterative compositions, and its modular aggregation reflect this ethos. This individualistic society, united by Islam's spirituality, harmoniously integrates minarets with merchants' homes. Today, Jeddah grapples with its dual role: a spiritual link between Makkah and the Sea, and a commercial maritime capital, giving form to a modern urban landscape.

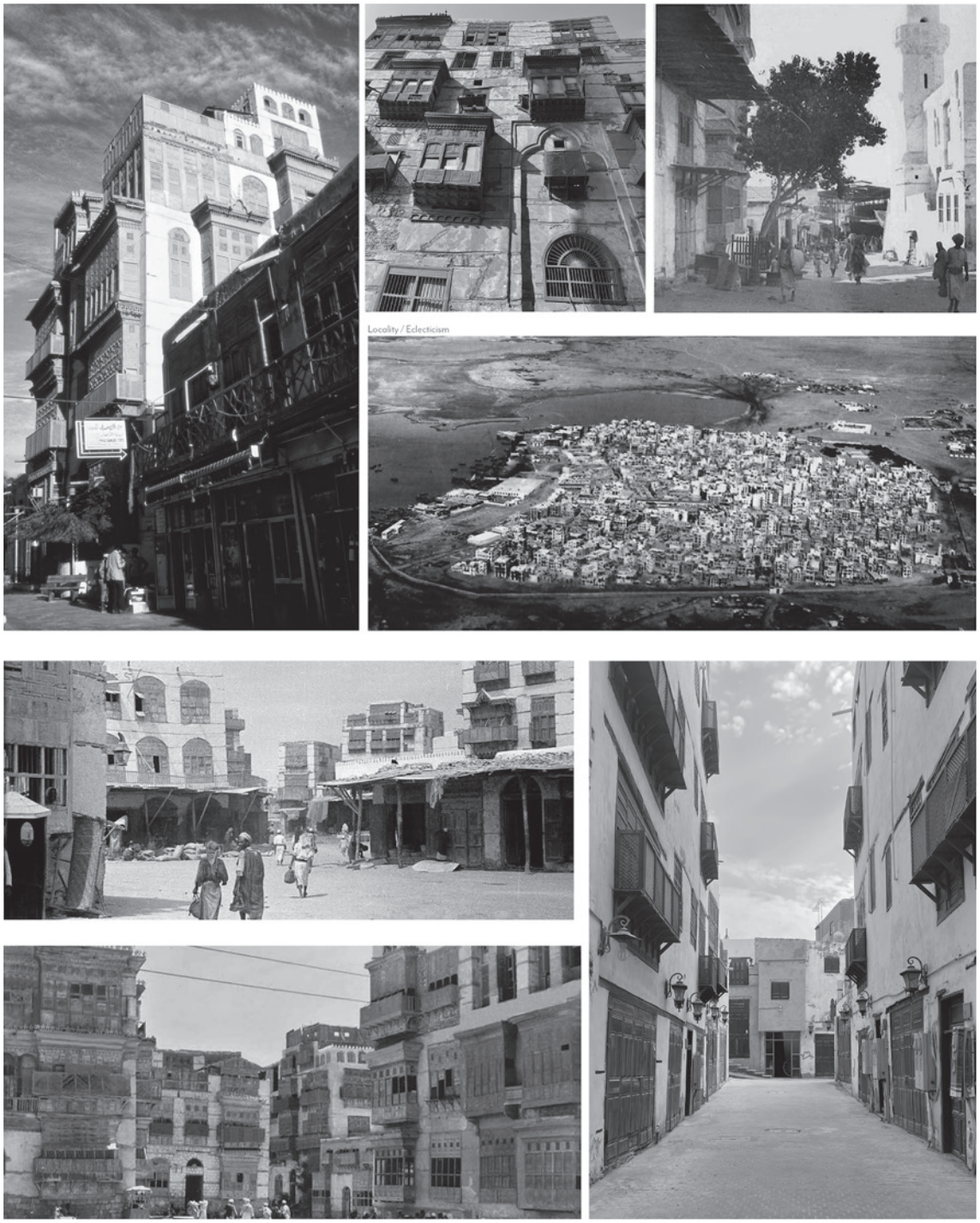

Figure 5. *Hejazi Dualities Roots.*

2.2.1. Case study: Culture Square

Located on the Al Arbaeen Lagoon near Al Balad, with the historical building of Beit Amir al-Bahr in the center of the area, this intervention is one of the main projects in the regeneration strategy of historic Jeddah. The significant role it played in the redesign of the city's future is confirmed by the project's centrality in transforming Jeddah, based on its undeniable natural vocation, into the most important cultural node of Saudi Arabia. Culture Square, with a built surface of 10.000 square meters, consists of two cultural complexes: the first will house a permanent museum of digital art and the second the permanent venue of the Red Sea Film Festival, a recently born international film event that aims to become the most important film festival in the entire Middle East.

The project is shaped through the reinterpretation, with a contemporary approach, of the Hijazi architectural features that can be found in the Al-Balad neighborhood, the old city. It is built in a human scale, which turns out to be compact yet permeable, articulated through the complex composition of simple and elementary volumes in an urban system where nothing is homologated but internal hierarchies are generated nonetheless.

The dialogue between solids and voids creates a rich landscape, dominated by the stark contrast between the vivid brightness of the surfaces exposed to the sun and the deep shadows of the courtyards. The town seems to move as a single organism, accessible from all directions both physically and visually with porous buildings, full of fractures and cavities to be permeable to the wind. Similarly, the complex enhances the connection between the city and the sea, provided via its Masterplan provision of a linear urban park profiling the coastline and extending it gradually through a soft inclined public park in an ascent to panoramic views of the historic center and the intricately designed coastline.

An arcade on the northern side of the complex serves as a threshold and demarcates the boundary between the internal and external realms. It forms a scenic plane facing the cityscape and embracing the historic building of Beit al-Bahr, whose presence prompts the conception of strategies to highlight its prominence, enabling a seamless integration with neighboring structures.

A public square delineated by the recesses of the principal structures and by the arrangement of palm trees is enriched by a slender water channel originating from a fountain in

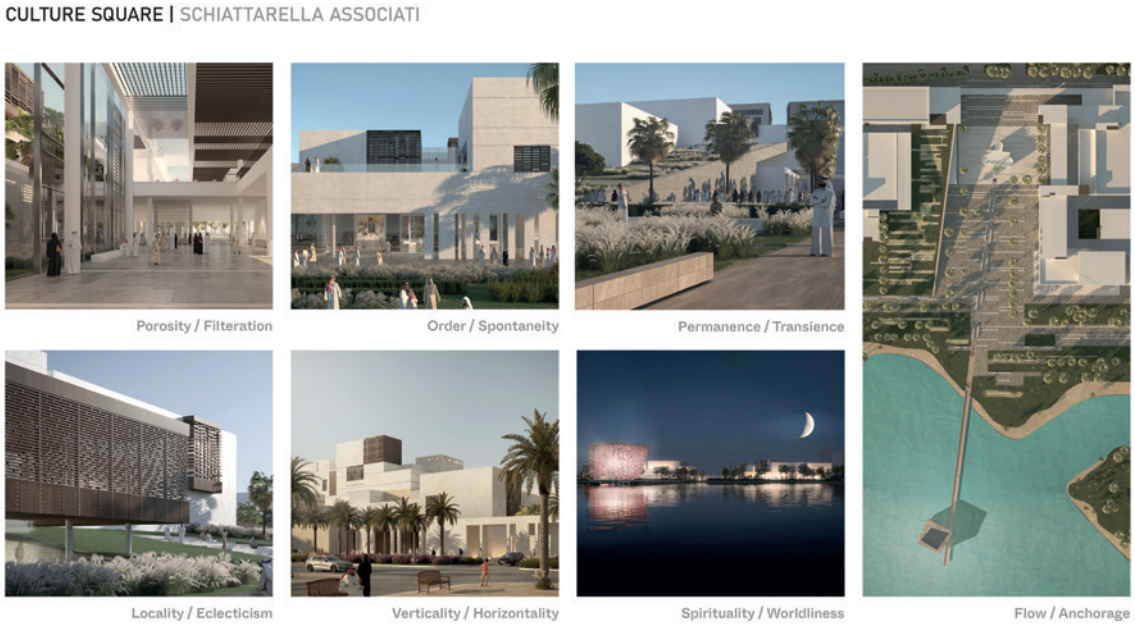

Figure 6. *Culture Square case study: main characters.*

front of the historical building, which meanders toward the sea, culminating in a waterside pavilion that functions as a distinctive urban landmark.

The outcome is a grand urban expanse extending toward the sea, framed by the two flanking structures, progressing perpendicularly along the coastline, which will house the digital museum and the performing arts center featuring an auditorium, cinemas and exhibition spaces.

The compact nature of the architectural form is marked by intricate volumetric patterns, incorporating abrupt fractures and recesses that confer porosity and permeability through voids and solids, while casting profound shadows and mitigating the weight of the massive walls through dynamic interplays of light upon white plastered surfaces. These ensure urban continuity, embellished by the ornate wooden textures of the Masharrabiya, offering both aesthetic variety and shielding from prying eyes and the intense zenithal sun.

Conclusions

Saudi traditional architecture and urban settlements emerge from a history of vernacular building systems, firmly rooted in the historical knowledge of surviving a desert environment. The approach to the genius loci, or local identity, is a prerequisite for any quality architectural or planning intervention and should be as site-specific as possible, considering that social values are key factors to responding and surviving in one of the most challenging environments. Not understanding the deep cultural roots of this architecture and the challenges people were faced with, would lead to formalistic and soulless architecture.

However, a deep dive into the three usual levels of urban form, buildings, and individual architectural elements can help break down the complexity of Saudi Arabia's built environment through understanding the varied factors that shaped each level. A systematic cross-referencing between different levels, from functional to physical embodiment, from social norms to environmental needs, is the way to proceed further in order to generate a visual code for contemporary architecture. A deep observation of these multiple factors offers an accurate view of a wide cultural background behind simple architectural gestures, which are more than an elaborate systemic built environment, and where all of those meet.

Acknowledgements

Supervision of Research work and Case study development is by Amedeo Schiattarella, Andrea Schiattarella and Alberto Riccioni. Other contributors to the Research work are Paola Schiattarella and Eric Scortegagna.

Supervision of the writing of this contribution is by Amedeo Schiattarella and Alberto Riccioni. Writing related to methodology and Najdi core characters and the MoMRA case study (Introduction, Par. 1, Par 2.1 and 2.1.1, Conclusions) is by S.Cimini; the Digital Art Centre case study (Par 2.1.1) is by C. Sacristán; the research on the Hijazi core characteristics (Par 2.2) is by M. Molinari and the Culture Square case study (Par 2.2.1) is by M. Molinari and C. Sacristán.

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