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To cite this article: Mohamed El Amrousi and Mohamed Elhakeem 2019 *IOP Conf. Ser.: Mater. Sci. Eng.* **471** 072047

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Abu Dhabi's Downtown Area, An Examination of Modernist Applications of the international style; Superblocks in a Modern Arab City, Improving Visibility and Social Space

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Abstract. Currently Abu Dhabi is expanding along its shorefronts and urban Islands creating many iconic buildings and social spaces, however, the downtown area is in need of regeneration. The city centre remains popular for a multi-cultural community because it was shaped by the modernist/International style and abstract Arab ornaments namely in the form of screens on the facades that attempted to fit within the climatic context of a desert city. The 'modernist' designs of the downtown buildings reflect practicality and pragmatism supported by Abu Dhabi's grid street pattern that created rectangular land plots on which high-rise buildings were constructed-known today as downtown 'Superblocks'. Abu Dhabi's downtown architecture reflect the ideas of Le Corbusier, Walter Gropius and other influential theoreticians of the International Style, the architects invited to participate in creating a modern Arab City in the 1980's did not attempt to create a post-modernist pastiche of a Arab/Islamic vernacular expression, in contrast facades of the concrete high-rise buildings reflect attempts to deal with the hot humid environment of the Gulf. This research examines means of regeneration of Abu Dhabi's downtown area, through the study of modernist buildings and the spaces between the superblocks. The area of study is the zone between Zayed the 1st street and Hamadan Street in the downtown area. We study selected buildings in downtown Abu Dhabi and offer recommendations for improving the social experience and liveability of in-between spaces, especially in the large asphalt parking lots created by the superblocks.

1. Introduction

Much of the urban fabric of Abu Dhabi has changed in the last decade, as the Capital of the United Arab Emirates reshaped its urban image to become one that reflects its interests in becoming part of the network of global cities, such as Hong Kong, Singapore and Kuala Lumpur [1]. This manifests a major shift from a city pre-dominated by architecture of the "International Style" and a grid based street pattern with functional residential concrete blocks planned in the 1970's. Abu Dhabi has little of its historical built fabric remaining probably because of the scarcity of fresh water, its soil conditions and proximity to the Arabian Gulf that affected the foundations of buildings and their built quality [2]. The historical vacuum allowed planners to design a city that reflected the ideas of Le Corbusier, Walter Gropius and other influential theoreticians of the International Style. In the hinterland city of Al-Ain, Al-Jahili Fort and the Sheikh Zayed Palace-museum offer a glimpse into a vernacular past of the pre-petroleum era as examples of adobe architecture common in hot desert climates, through their thick walls, narrow windows and crenellations. Abu Dhabi remained without significant urban expansion until Sheikh Zayed Bin Sultan Al-Nahyan approved a 'modernist'



development of Abu Dhabi following the unification of the Trucial States and birth of an Oil rich nation in 1971. However much has changed in the last decade as Abu Dhabi expanded its development to create urban islands such as Al-Reem, Maryah, Yas and Saadiyat Islands. Extensive gentrification projects have also taken place on the Corniche of Abu Dhabi and in the process; much of its modernist architecture has been overshadowed by the new high-rise glass towers, this process is also coupled with establishment of the ferris wheel in Abu Dhabi Marina and double decker buses from which the city can be viewed (Figure 1). This study looks at some of the attempts of architects to create a style that is modern yet culturally sensitive.



Figure 1. The old port of Abu Dhabi versus Abu Dhabi Marina

As part of Abu Dhabi's expansion the cultural projects in Al-Saadiyat Island, have acclaimed visibility and manifest the emergence of Abu Dhabi on the Global City network map especially through rebranding its image via culture and leisure waterfront epicentres [3]. Projects such as the Desert Louvre by Jean Nouvel, the Abu Dhabi Guggenheim by Frank Gehry, and the forthcoming Zayed National Museum are all part of Abu Dhabi's strategies to create a resilient city that addresses sustainability and cultural identity. Urban waterfront redevelopment is an ongoing phenomenon especially along its shorelines that are becoming increasingly more urbanized. Abu Dhabi's city image creation is becoming visible in the form of reframing the urban context of Abu Dhabi as is evident from the major investments in its shorefront developments parallel on Al-Corniche and plans for Mina Zayed. These new forms represent ambitious targets, attractive designs, and the ability of the oil rich state to use innovative technologies, as manifested especially by iconic projects and mega structures, that supplant its initiative to create a modern city with a vision to emerge on the global map.

The new projects highlight a surprising reversal of what we have come to expect of architectural works that were based on modernist simplicity, pragmatism and ideas of the international style adapted to climatic context addressed through abstraction of Islamic motifs and a sense of originality in aesthetic modernism [4]. In contrast, new projects in Al-Saadiyat Island highlight the extent to which globalization, and shared interdependency have become a fact especially in emerging Gulf State cities, through which a global imaginary is becoming an environment and an identity. Through the formation of new spaces by international star architects strengthens the boundaries of segregation between 'public' and 'private' space in the city emerge, and abstraction of ornament is replaced by high-end projects that are in many cases gated and themed to highlight their Arabian identity. This recent urbanization of Abu Dhabi's islands reflects its understanding that waterfronts are a precious resource which are unique in their potential to provide diversified opportunities for economic development, public space and a newly founded cultural identity based on manifestations and interpretations of Islamic ornaments applied to contemporary architecture.

2. Global changes and the modern Arab city

Downtown Abu Dhabi fostered attempts to create a modern Arab identity as manifested via its building stock of the 1970's and 1980's was fragments of ornaments from a wide spectrum of Islamic vocabulary and Arab building traditions can be seen in the city's block shaped by residential and commercial towers. Abu Dhabi planners and city makers outlined a series of buildings regulations. Abu Dhabi's modern heritage adopts many ideas of the International Style such as functionality, extensive use of concrete, and clear-cut form, production of such a style commenced after oil production in 1958 and the booming of economy which was accompanied by an influx of expatriates and visitors. This large foreign population affected the city's landscape and built environment. The International Style, soon became a crucial part of Emirati built heritage history, because very little built heritage exists in Abu Dhabi prior to the 1960's. The grid street plan of Abu Dhabi has major arterial roads intersecting each other generating superblocks that were gradually filled by concrete multi-story buildings. This created a stock of residential buildings that were functional but not iconic enough to create an international image of a modern city that aims to emerge on the map of global cities. There is no doubt that today the Arab world, and especially Gulf state cities are becoming urban, at diverse rates and with comparable characteristics. Accordingly, the capital city becomes more connected to world outside than to its peripheries, while some areas of the city become a liability [5]. As Martin Heidegger highlighted in his later work, to any deep sense of dwelling or belonging, then the combination of the spatial displacement of Abu Dhabi's expatriate community, coupled with a reproduction of the past indicates how spaces are now 'transported' and replaced by places [6]. Similar ideas shared by [7] on globalization and shared interdependency that have become a fact of life through which a global imaginary is becoming an environment and an identity, the iconic projects currently being constructed i.e., the city's new urban development is planned to reflect the wealth of the oil rich state through the iconic scale of their buildings and signify a new image of the city that adheres to Abu Dhabi's interest of emerging on the Global City network such as Singapore, Hong Kong, Kuala Lumpur...etc.

Manifestations Abu Dhabi's urban imagery changes is seen in its plans to gentrify the old port by Sasaki The Mina Zayed Waterfront Pier (MZW), located at the east end of Abu Dhabi's famed Corniche, will be a milestone project for the UAE. Conceived of as a fully integrated mixed-use district, MZW is tied together by a series of pedestrian-oriented public spaces and a world-class waterfront promenade. The proposed MGM Hotel Complex anchors the west end of MZW and overlooks Abu Dhabi City, Lulu Island, and the Arabian Gulf, while Sasaki's plan for the middle blocks of the development combines three hotels, meeting and ballroom facilities, retail space, and residential apartments into a powerful, iconic district (Figure 1). In addition new urban islands such as Al Maryah Island which strikes a contrasting juxtaposing between its iconic structures such as the Four Seasons Hotel, Galleria Mall, Cleveland Clinic that are separated by a water boundary with six bridges connecting it to downtown Abu Dhabi with its 1970's modern heritage such as the Meridian Hotel, Diar Dana Hotel and residential block towers of the International Style. This juxtaposition has generated parallel and contradictory attitudes towards the use of existing modern heritage as precedents for forthcoming architectural designs. Signs of becoming part of the network of global cities are evident in the scale and iconism of emerging architecture.

The Abu Louvre project, by Jean Nouvel, is indeed another of the iconic project intended for the Saadiyat Island cultural area. (Figure 2) As such, it will doubtless take its place, once built, as a major work of architecture in support of the broadly economic, and the more narrowly construction and touristic agendas, expressed in the Abu Dhabi 2030 plan. At the same time, however, it hardly conforms to a strategy of harnessing instantly recognizable fragments and forms from the history of Islamic architecture in Abu Dhabi. That the 'Desert Louvre' attempts, rather, to introduce new architectural forms is seen most clearly in the models and renderings which never fail to highlight the design's massive netted dome. This dominant design element rests on explicitly modern columns, rather than on traditional structural elements such as pendentives, squinches or muqarnas that follow from Byzantine building traditions – formal symbols widely adopted by, and now broadly

characteristic of, Muslim architectural expression. The large netted dome allows various modulations of light and shade to reach its sheltered environment, and it is perhaps here the project's connection to Islamic architecture first becomes clear. The Louvre project's dominant design elements – a single overarching dome, a textured assemblage of abstract vernacular boxes, and a pervasive network of pathways and travel routes – together insist on the importance of activity and movement unified in a place of community, at once both sheltered from its surrounding and open to a cosmos stretching across Islam.

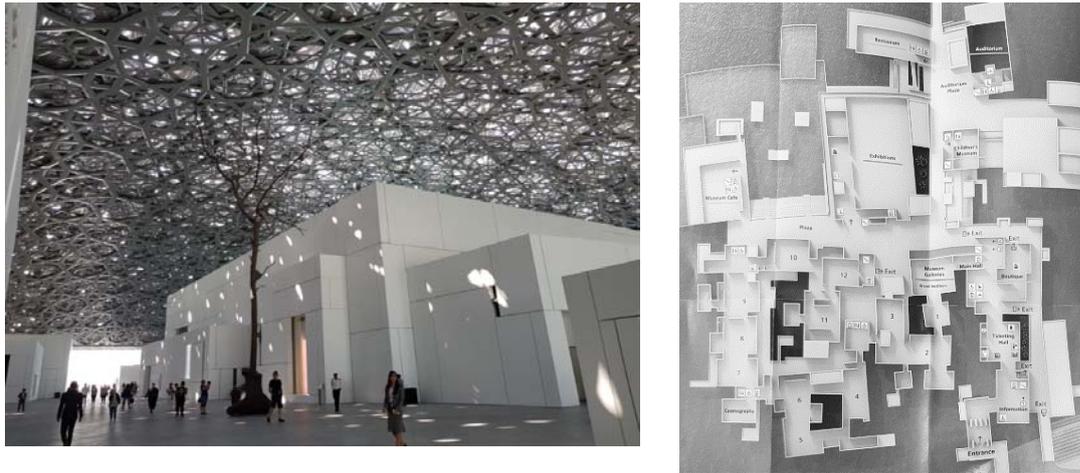


Figure 2. Louvre Abu Dhabi, vernacular expression, the dome and perforated screens redefined.

3. Urban identity versus modernization

In contrast to the Abu Dhabi Louvre that is built on the idea of a traditional Arab City, Abu Dhabi developed since the 1970s on a very different plan, a plan that is dominated by a grid street pattern and rectangular high-rise buildings creating Superblocks (Figure 3). The plan of Abu Dhabi is a reinterpretation of an Arab city with a change in the traditional architectonic vocabulary. Here we need understand tradition in light of the nature of Gulf state cities, as urban sites in transition in a changing world, with transformative states of identity. Foster & Partners, replaced one form of public space with another, and manifested through the Souq opposing architectural styles; a closed space of commodity exchange and social gathering for a new generation in the dense city fabric, and a reinterpretation of tradition through its contrasting other. There is no doubt that today the Arab world, and especially Gulf state cities are becoming urban, at diverse rates and with comparable characteristics, they have become more connected to a globalized realm beyond than to their hinterland [5]. Abu Dhabi's city centre of the 1970s has not changed much, except for the demolition of its central market and introduction of a new high end Souq designed by Foster and Partners. Initially buildings of the Central market were designed to integrate external spaces, landscape and commercial units, within a geometric formation founded on rectangles and cubes [8]. Designed by Abdelrahman Makhoul in the 1970s the modernist space integrated exterior and interior spaces creating a retail hub of around two hundred shops it also represented a space of interaction that merged shopping activities with socio-cultural interaction of a multi-ethnic nature reflecting the community of Abu Dhabi as a transit city. The Central Market was not meant to be iconic or upscale, on the contrary it was designed to be easily accessible through its integration of urban landscape of the surrounding, living city. The design composes of a large rectangular two-story open market that was mainly occupied by indo-Pakistani merchants. The Abu Dhabi market supplied the city with cheap goods, textiles, electronics and jewellery, more important it was a gathering place, a plaza for the public with all its social groups. Today a new social class enjoys the Shakespeare Café, and abstract wooden louvers simulating traditional shading devices-mashrabiyya (Figure 3). The mega project replaces one form of public space with another, merges two opposing architectural styles; a closed Souq clad with

screens, and towering glazed skyscrapers and acclaims sustainability, which in many ways symbolizes the changes in Abu Dhabi [9]. Foster & Partners promised to transform this space into a dynamic new quarter with markets, shops. (Figure 4) The new souq represents a reinterpretation of the traditional market in contemporary context and a social space for the expatriate community of Abu Dhabi. The project opened in 2011 comprised a combination of high-end boutiques, cafes, and roof gardens – forming a new public space Central to for Abu Dhabi’s upper middle class. in the process the multi-ethnic public space has disappeared along with its indo-Pakistani In an urban settlement that has little built tradition and a community mostly of expatriate’s workers, these regulations allowed a process of borrowing from the wider spectrum of forms of the Arab-Muslim tradition.

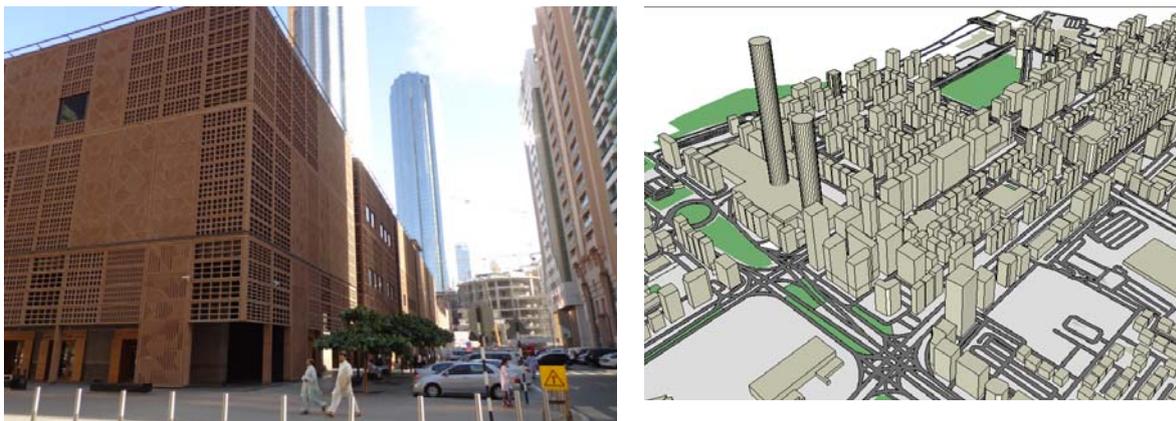


Figure 3. Abu Dhabi Abu Dhabi Central Souq integrated within grid street plan and living city context.

4. Avoiding the urban collage-revisiting identity and ornament in Abu Dhabi’s downtown area

Initially Abu Dhabi was conceived as an ideal modern city planned with wide main streets lined with 20 to 30 story towers behind which are lower residential units and villas. Planned as a rigid grid of shops connected by narrow alleyways, it hosted more than the economic activities for which it was built. Social interaction, informal exchanges, and all sorts of gatherings flourished along its alleys. They created a value that reached far beyond the building's engineering, architectural, or aesthetic features. In a city whose culture and history were shaped by modernism, emblematic modern buildings should be preserved. Abu Dhabi’s modernist structures from the 1970s and 1980s had simple designs with right angles, circular forms, and minimal ornamentation in comparison to contemporary emerging mega projects. Many of these buildings in downtown Abu Dhabi are shaped by a collage of narratives with Arab-Islamic reference, and the modernist application of *brise soleil*. Examples such as the Hamed centre highlights the use of patterned facades, shading devices, projecting frames and screens that aim to protect the inhabitants from the harsh weather conditions. In addition to offering privacy, and shape a sense of belonging to the building to an emerging city. Hamed centre is one of the first shopping malls of Abu Dhabi and still popular for its old world shopping style (Figure 4). The compact shopping centre still offers its visitors a sense of the functionalism of the international style through a range of shops that sell jewellery, watches, electronics, perfumes, and garments. The building did not replicate the traditional Arab bazaar in contrast it offered a modernist interpretation of Islamic ornament that caters to site specific and cultural needs. International architects and consultants used these repertoire of shapes and patterns to theme most of the urban fabric of the city without any critical distance. Consequently, architects and planners of the 1970’s shaped the city appearance and identity by breaking façades into geometries of projecting masses ornamented by GRC screens, arches and stalactite units called muqarnas.

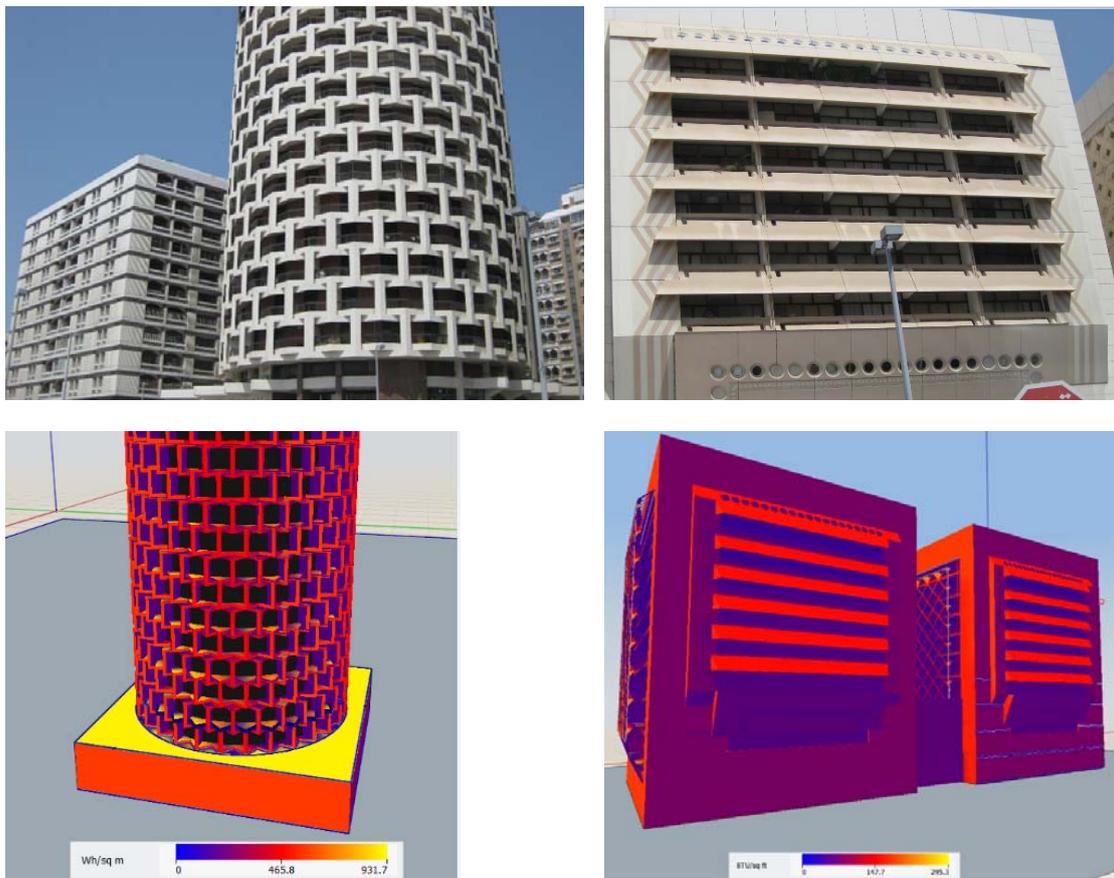


Figure 4. Al-Ibrahimi Tower & Hamid Centre examples of modern design addressing environmental context.

Other Examples of the balance between modernity and tradition are Obeid Al-Mazru'I tower -in Electra street- with its white circular pattern that frame windows and balconies composing a double façade skin that shade the building while giving a sense of privacy. Buty Al-Otaiba tower –done by ADC Jamar Najjar & Ziki Homsy Architectural consultants in 1982- is composed by a rigorous system of hexagonal openings, a pattern of moldings that emphasize the massive proportions of the tower through an abstract texture. Al-Ibrahimi Tower designed by Egyptian architect Farouk El Gohary in the 1980's is a creative and thoughtful arrangement of interlocking concrete beams that shape the balconies of a 16 stories residential tower with a cylindrical plan. Instead of borrowing muqarnas and arches from Islamic palaces and mosques, these residential buildings reinvented Arab traditions through the use of lattice work, perforated panels, and patterned screens that recall regional traditions. The mentioned environmental façade solutions are aligned with the harsh climate conditions of the place. Ultimately, the former examples integrate multiple regional narratives that are connected with the local need of providing sustainable design solutions. Currently much of the city's urban fabric and architectural identity is changing through a master plan that advocates cultural monuments and piecemeal implantations of extravagant architectural icons that manifest fragments of historic remains. The 'Abu Dhabi 2030 Master Plan' attempts to transform the city beyond its current urban identity as a transit city for expatriate workers, to a city that reflects the image of the oil rich state, that retains tradition and conforms to indispensable modernity as the Capital of the UAE. International architects and planners practicing in the UAE are challenged to address the slippery and delicate realm of identity within a world where digital medium transgress all national boundaries. It must be highlighted that the architectonic quality of the Abu Dhabi's buildings especially in the downtown

area and attempted to integrate a modern heritage and the contemporary interpretation of Arab traditions.

Masdar City designed by Foster and Partners is a good example that can be used to address the regeneration of downtown Abu Dhabi. Masdar highlights the role of sustainable design as a good design practice where technology and real live buildings co-exist. Our simulations using Formit software indicate the building performance of the facades of buildings of the 1970s that have been found to use 260-280 KWh/m²/year as opposed to glass towers that use around 380 KWh/m²/year. Masdar City revived the use of building skins as a new form of environmental design in the architecture, this is highlighted through the design and new materials used on the facades of the three main buildings such as Siemens Headquarters, the Incubator building and Masdar Institute. Here sustainability as an integral factor of architectural design is essential within the current economic situation in order to preserve energy resources for future generations. Masdar exemplifies the necessity to design buildings with vernacular precedents in mind yet without creating a post-modern pastiche (Figure 5). Sustainability here as criteria of design is highlighted in the use of energy efficient buildings and modular application of Islamic elements that are made visible through perforated screens. The use of water as an element of the natural environment combined with the perforated screens creates new paradigms of shade and shadow in addition to live examples of environmental design based on historical precedents [10]. These can also be used for architectural education gearing them towards environmental design and new perceptions of modern Arab/Islamic architectural identities. Traditional passive cooling techniques such as the use of water bodies as cooling grounds on which air passes before coming in contact with the building facades.



Figure 5. Masdar City perforated screens as retrofitting examples for regeneration of the downtown area

Masdar and the Abu Dhabi Louvre display various forms of shading devices addressed by Estidama and in the Abu Dhabi 2030 Vision. These new applications of Islamic and traditional designs in a contemporary context cater to the societal composition in Abu Dhabi that consists namely of multinational Arab and expatriate communities. The use of the contemporary screens represents an inevitable necessity adhere to global changes in the realm of architecture to produce new forms. The visibility of the screens on such a scale, and designed with various sustainable materials on the facades of buildings promotes new interpretations of traditional ornaments and patterns that can be integrated onto modern buildings as a second building skin that veils the glass surfaces of the buildings and

creates more comfortable and sustainable indoor environments [11]. Here sustainable design seeks the integration and understanding of closely-coupled human-environments. Screens when used as building skins in the practice of modern architecture become directive and exemplify the use of traditional patterns with new materials and designs to explore designs that relate to the past but break through the confinements of tradition.

The facades of Masdar City represent a modern interpretation of a traditional neighbourhood where visual privacy is important due to the tightly knit fabric of the neighbourhood. The combination of the spatial reproduction and environmentally oriented urbanism create a new image of a traditional space with a new interpretation of local lifestyles and standards of living. Such new building typologies integrate many sources of knowledge in addition to the multi-ethnic background of practitioners in architecture and the experience of star architects such as Jean Nouvel and Norman Foster. The diversified facades in Masdar City offer an opportunity for future designers to create architecture in Downtown Abu Dhabi that has strong foundations in sustainability because the real live scale of the buildings that represent the possibilities of numerous scenarios of application of sun breakers, building screens and double skin façades.

5. Conclusion

Abu Dhabi's interest to make headlines of the international media fostered major investment in an endless vocabulary of forms and fragments to create architectural spectacles. The new skyline of Abu Dhabi is experienced through symbolic imprints of multiple policies framed within an urban context to project an image of a city offers cultural landscapes, assembled in islands that act as urban centres separated by waterways. Abu Dhabi's vision to address sustainable design and create iconic architecture is witnessed in many of its new developments in Al-Saadiyat Island with its domed micro-environment in the Abu Dhabi Louvre and the diverse building skins and perforated screens in Masdar city. The forthcoming years will see the opening of three major cultural institutions on the island such as the new Zayed National Museum and Guggenheim Abu Dhabi both of which address the climatic context and cultural identity of Abu Dhabi. Each of these projects has involved a partnership with its international star architects and they manifest the importance of redefining traditional forms beyond the post-modern interpretation. Emerging institutions Culture such as the Abu Dhabi Louvre, Manarat Al-Saadiyat, Zayed National Museum, and the Abu Dhabi Guggenheim influence artistic, contextual, and technical backgrounds. The new building typologies emerging in Al-Saadiyat and Al-Reem Islands can be better understood within the context of a wider process of urban zonal differentiation following the straightforwardly delineated spaces of some spaces such as the downtown area. Today shaping the identity of the city is highlighted by projects that address the problematic cultural and contextual integration of architecture within a specific environment. Such projects can also act as a catalyst for improving the performance and social space in Downtown Abu Dhabi through applying the same sustainable strategies to a living city centre.

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