

# A cultural paradox and the double shift of the housing typologies in the Arabic Gulf area: Undergraduate research case studies in Abu Dhabi.

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Abu Dhabi's transition from a fishing village to a contemporary capital city in less than 50 years is more than remarkable. Its rapid growth, fueled by oil revenues and combined with a real estate frenzy is reflected into its urban morphology. The origin and evolution of Abu Dhabi's urban grid has swung between political pragmatism and modernist influences of Doxiadis' master plans in the region.

However, its architecture is highly diverse in terms of stylistic approaches, with little influence from the rich Arabic vernacular heritage. Especially when it comes to housing, Abu Dhabi and most of the neighboring cities in the GCC area have been monopolized by the presence of the "western villa" typology. This phenomenon is poorly analyzed in related literature.

This paper will present the preliminary results of two ongoing parallel undergraduate research programs with regards to the cultural clash that perseveres in forging the urban scape: the western villa, its properties manifesting an absolute contrast to the prevailing Islamic values and daily patterns. It will also attempt to identify the underlying resonate.

In addition to that, there will be an analysis with regards to an attempt from the urban planning authorities towards a second shift back to the neglected principles of the Arabic urbanism and traditional architecture, for achieving sustainable targets. Indeed, Culture was recently introduced as the fourth pillar to the local sustainability accreditation system (called "Estidama"), in a parallel attempt to reinstitute a national identity. To that direction, both research and academic studios' work have already started producing a promising outcome that would definitely affect the urban environment and improve its spatial and social parameters.

KEYWORDS: Abu Dhabi, typologies, housing, culture, Arabic

## INTRODUCTION

Abu Dhabi's growth during these fifty years of oil-driven history may be comparable to biological rates. That pace leaves little room for the creation of a palimpsest, a historic layering that would build upon, protect and exploit the properties of this sequence that are vital to a city's success as a social capacitor. The so-called collective memory and eventually the creation of an urban identity, in parallel with a national one are forged within such environments and in return they operate as an added value to the direction of time.

Given the eradication of its pre-oil core, Abu Dhabi's architecture and urban planning have become a key factor on introducing a novel, modern identity for both the newly-born federal state of the UAE and its Capital city. Doxiadis' superblocks influenced the iron grid plan that also fitted the political priorities for equity, uniformity and flexibility enough to rapidly channel the anticipated oil revenues into the production of urban space (Kyriazis, 2017).

That rapid growth doesn't come without consequences, since two of the main urban elements are considered as temporary or even ephemeral. Buildings are set to live in a "laissez faire" mode guided only by real estate market rules and are replaced in pre-arranged time periods regardless of their aesthetic value and their overall contribution to the context. So apart from the loss of all pre-oil structures, many neglected modernist and post-modernist specimens are replaced by shining towers and heavily decorated villas. It is only recently that initiatives with regards to preserving that last-remaining heritage through retrofitting have emerged (Menoret, 2014b).

In an oddly similar way, the citizens themselves are also considered highly expendable. The expatriate communities of the city that make the vast majority of the population mix arrive, work and live under the knowledge of temporality, as this being the philosophy of the visa-providing system in the UAE (sponsor-based). So on one hand, the multicultural set of architects and designers have – together with the ever-broadening imagery of the local clients – produced a highly diverse international architectural vocabulary that seems to be far more associated with the display of superficiality than with context-driven needs. However, on the other hand, even being part of the temporal population they fail to connect to the collective values of

the city, thus reinforcing that superficiality and failing to forge a modern national architectural identity (as the political leadership has been aspiring to since the '70s).

Supporting that statement, Islamic patterns of everyday life that dominate the urban condition – even as defined by the city's urban planner, Abdelrahman Makhoulf (Reisz, 2013) – seem to come in direct contradiction with many of the selected urban morphologies and architectural vocabulary. This paradox is the subject of the ongoing research presented here. Its documentation could resolve fundamental issues regarding architectural education in terms of the need to address issues related to contextuality, locality and a synthesis-driven design.

## **1.0 RESEARCHING ABU DHABI'S SUPERBLOCKS**

### **1.1. Research identity**

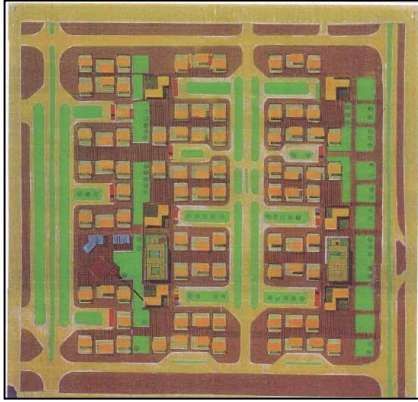
This paper presents findings from two ongoing undergraduate research programs conducted by the authors. The programs enjoyed internal funding, in an effort to stimulate critical thinking and architectural research even from junior years. The primary target was to identify, document and register the variety of morphologies, typologies and special architectural elements used on the façades, the plot or the sidewalk. Since literature directly connected to Abu Dhabi is quite poor, such an endeavor alone would be extremely useful in creating an index of the architectural vocabulary used in the city. Later on, those quantified data could be cross-compared for the extraction of some more qualitative results.

The initial question of the research itself was to analyze the architectural vocabulary of the prevailing urban housing scheme in Abu Dhabi and to report incompatibilities with regards to climatic conditions. However, the outcome of this study soon passed beyond climate and reached a social, cultural and religious agenda.

### **1.2. The urban setting**

All land and buildings on the main Abu Dhabi Island belong exclusively to Emirati nationals. In the early 60s, Sheikh Zayed distributed to each Emirati three plots on the island, allocated for residential, commercial and industrial use, in an unprecedented gesture of generosity (Al Fahim, 2013). Together with the iron-grid plan of Makhoulf (that was based on the Islamic neighborhood pattern of the superblocks), it took less than two decades for the city to spread throughout the whole island (ADM, 2003). Later on, in terms of construction loads, the "Khalifa Committee" assisted Emirati owners to construct and manage buildings on their plots in big numbers through repetition of typical plans (Elsheshtawy, 2011) and popular post-modern ornamental approaches seemingly referencing Islamic geometries. Much of Abu Dhabi's existing building stock belongs to this act, forging today's superblocks and a critique regarding the aesthetically bland and banal urban morphology (Samarrai, 2016). Today, the urban space is regulated and managed by a set of exhaustively detailed standards and a sustainability accreditation system similar to LEED, called "Estidama".

The uniqueness of the Abu Dhabi superblocks is not because of its street network but of its binary morphology that resembles the "watermelon" structure (with a high-rise "peel" and a less dense inner part). This pattern is highly evident on the main island, especially on its northern half. Makhoulf's grid and the "watermelon" morphology were highly influenced by Doxiadis' work (Kyriazis, 2017) in nearby cities (Baghdad, Islamabad and Riyadh) together with one of Makhoulf's tutors, Hassan Fathi. His theoretical work on Ekistics, the science of human settlements, a dynamic interpretation of the modernist urban planning approaches (Doxiadis, 1968) was spatially manifested in these three examples by two distinct elements: the dynamic growth axis and the neighborhood modules or Superblocks. The automobile was the indisputable means of transportation and growth. However, Doxiadis provided a far more flexible approach compared to other modernist urban planners. A fractal approach on the modules' scale, the watermelon pattern and linear parks connecting the public space cores displayed a will to tame the urban mega-scale to human scale transition (Kyriazis, 2017). Makhoulf adjusted those ideas to create an Islamic capital with a new national identity. He proposed a neighborhood unit with low-rise residential use and all necessary community facilities (Figure 1): "I made a social plan for how we would fill Abu Dhabi's grid with housing. Each unit had seven houses. The plan was made so that neighbors from the same block could sit together after evening prayers. My plan reflects their traditions. You don't have to walk far to visit your family, and you had all your services, including the mosque and school, nearby" (Reisz, 2013).



**Figure 1:** Layout of a "social neighborhood unit", by Dr. Makhlouf (Reisz, 2013).

### 1.3. The first typology shift: The western Villa takeover

The Sha'abiyat (the typical Emirati housing unit) was introduced by Makhlouf as a reinterpretation of the traditional Arabic courtyard house (Menoret, 2014b). However, the transition to the western villa was fast and complete as all traces of the traditional houses soon became obsolete. His original blocks now survive on a small part of the city, with inflated volumetrics, altered morphologies and a more diverse set of land uses on the ground floor level<sup>i</sup>.

Although there is efficient amount of literature regarding housing in the GCC countries, there are almost no references dedicated to the shift from the courtyard house to the setback villa in terms of process, resonate and motivation. A shift with paramount implications on the production of urban space, sprawl, the human scale and the sociocultural daily patterns and behavior.

Menoret argues that the first villas were implemented to host the western expatriate officials of ARAMCO in Saudi Arabia, soon after the beginning of the oil boom. Their design then passed to shape the newly regenerated Al Malaz neighborhood in Riyadh as an attempt to modernize the city. Original suspicions were soon replaced by what would become a bourgeois dream, a way for the emerging urban classes to imitate the princes and isolate themselves from annoying rurals, a symbol of social distinction (Menoret, 2014a: 110). The detached villa, regardless of the social, cultural and religious paradoxes that was creating (windows' blocking and plot wall extending) and the climatic incompatibility, became a trend, an icon, a means of splurge and a tool for social segregation and gentrification from within.

In the UAE, Sheikh Zayed's political perseverance allowed for a swift start of the Emirati national housing program, through the "sha'bi" – the "people's house" and the incorporation of vernacular elements and Islamic architecture (Eisheshtawy, 2016). The modular courtyard house – made to fit the everchanging needs of the Bedouin people, proved far from rigid. Its adaptable and flexible typology allowed for a wide range of customizations and transformations that addressed both functionality and urban aesthetics through the direct involvement of the end-user in an unlikely participatory process.

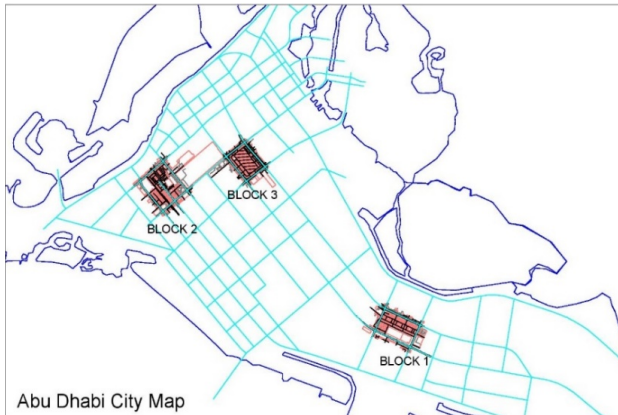
The western villa transition in Abu Dhabi and Dubai took place within the early 80's, due to the oil and – consequently – automobile boom and an urban sprawl that covered almost the entire Abu Dhabi Island and parts of the mainland. All developments including the national housing program were increasing plot sizes and automobile dependency to the expense of community facilities (Alawadi, 2016). The impact of the western villa to Riyadh's upcoming middle class was easily transferred to the other Gulf States. Combined with new sets of standards by authorities and the need of the land-owning nationals to distinguish themselves, the villa typology prevailed and monopolized all low-rise areas of Abu Dhabi.

Furthermore, the overwhelming growth rates and the complete absence of a pre-oil traditional housing architecture seem to have created a new stereotype for the form of the single housing unit. A stereotype that would be reinforced by the suburban explosion in the last three decades, the ongoing automobile domination and the common practices approved and implemented in the vast majority of housing developments in the country. Its presence is easily detected in the work of early years architecture studios, where students are still anchored to perspective. Practically, one of the underlying objectives of the research programs presented here was to identify, analyze and question that particular stereotype in terms of its adherence to the social, cultural and climatic context.

## 2.0. FIRST CASE STUDY: A SUPERBLOCK

The first case study to be presented was the subject of the first of the two research programs mentioned. The study team made a first round of superblock selection within the island of Abu Dhabi (Figure 2). These three blocks would have to be approximately on the average size of all city blocks and present a basic variety of

land uses and morphology, in order for the following analysis to be representative enough and to be able to produce essential comparisons.



**Figure 2:** Abu Dhabi City map showing the selected blocks.

### 2.1. Selection of superblock

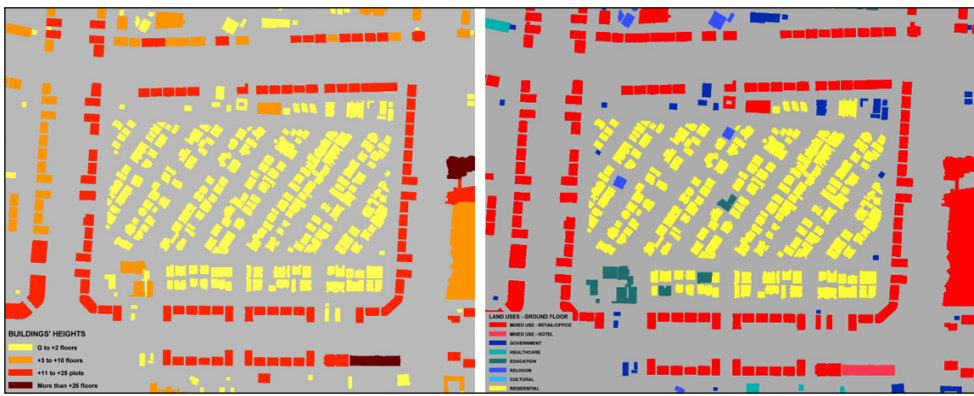
- Block No1 is rectangular and contains a shopping mall that faces a large park. One side of it has midrise buildings (G+5) along the main road. The rest of the superblock holds low rise villas (G+1 floors). It has a residential density of 60-80 units/gross hectares and 5-10 units/gross hectares. Some retail shops exist on the ground floor of the midrise buildings.
- Block No2 is also known as the Khalidya Village. Mid-to-high rise buildings (from G+5 on the interior to G\_25 on the perimeter) cover half the block and the rest is just low rise (residential townhouses). It has a residential density of 10-20 units/gross hectares.
- Block No3 displays a rather striking design. Its rectangular shape is dominated by high rise buildings on all four sides (G+25 floors) that enclose a group of low rise villas. This is what a “watermelon” block is characterized by. In numbers, a high density of 80-100 units/gross hectares exterior surrounds a residential density of 5-10 units/gross hectares. Furthermore, apart from the peel or the block’s outline, the low interior follows a rotated axis system, aligned to north-south direction.

After analysing the three superblocks, the third one was chosen for possessing most of the features desired for the conduction of the rest of the study.

Block No3 has the highest density in its building units compared to the other two blocks. Higher density housing ensures that the inhabitants have everything in walking distance and live in a dynamic neighbourhood. It also has the highest number of high rise buildings in all three superblocks with the rest of the building units being 2-3 story villas (figure 4). The block has a variety of land uses from retail, medium density residential to educational units. This sharp variation in building heights and land uses makes it a very intriguing site for further architectural analysis (Figure 5). Block No3 also exhibits rather unique features in comparison to the other two blocks in terms of layout alignment that makes it stand out from the rest of its neighbouring blocks in a very pronounced manner. Actually, it is the only one in the entire urban fabric with a rotated interior that doesn’t align to the external edges (figure 3). A first assumption regarding the resonance hidden behind this gesture could be the alignment of all internal plots (and consequently buildings) to the North-South axis, in an attempt to harvest the most of the sunlight on the streets, the best of the housing orientation, the best for aligning the Mosques to the grid (the Qibla line in Abu Dhabi is almost parallel to the North) and the optimum for catching the prevailing northern winds.



**Figure 3:** The chosen Superblock, showing its typical properties both in a Google Earth image and in plan (produced by the Authors).



**Figure 4:** Maps showing the existing buildings' heights and the ground-floor land uses within the selected superblock (produced by the Authors).



**Figure 5:** The selected Superblock as seen from an angle. The “watermelon” feature with the outlining high-structure envelope and the low interiors is easily recognizable (photo credit: principal author).

## 2.2. Quantitative Analysis

An in-depth study of the chosen block was conducted to analyse the morphology of the housing units. That study was conducted by a thorough site visit that included notes, photographs and a quantitative documentation of urban morphology features and architectural elements, both combined with land uses. All elements were chosen for the clarity and importance in describing and defining all necessary spatial attributes. Unfortunately, due to extra sensitivity with regards to privacy issues, the research team was unable to access areas within plots and document these elements mentioned. So all observations were restricted to a street-view, in combination with satellite imagery (Google Earth).

**Table 1:** Urban morphology elements on plots/buildings per land use (source: authors).

Urban Morphology	Elements	Retail+ Residential	Retail+ Office	Retail (Hotel)	Residential	Government	Religion	Education
	1 to 3	0	0	0	103	4	4	1

Heights (G+ floors)	4 to 10	6	0	0	0	0	0	2
	10 to 25	54	1	4	0	0	0	0
Plot Coverage	Up to 70%	0	0	0	8	1	2	0
	70% - 100%	60	1	4	95	3	2	3
Setbacks	Yes	60	1	4	78	2	3	2
	No	0	0	0	25	2	1	1
Condition	Old	25	0	0	57	3	3	1
	New	35	1	4	46	1	1	2
Plot Wall	Yes	0	0	0	101	3	2	3
	No	60	1	4	2	1	2	0
Garden	Inside	0	0	0	47	1	0	2
	Outside	1	0	0	49	0	0	0
Parking	Inside	0	1	1	56	1	0	0
	Outside	60	0	3	76	3	4	3
Sidewalk	Yes	60	1	4	103	4	4	3
	No	0	0	0	0	0	0	0
Side Elevation	Open	22	1	2	53	1	4	2
	Blind	38	0	2	50	3	0	1
Total Building Units		60	1	4	103	4	4	3

The most remarkable points demonstrated through Table 1 are:

- The majority of the buildings have a plot coverage of 70% to 100% (total absence of open/uncovered plot area). This surprisingly includes the low-rise villas, thus highlighting the failure of the setback rule as a regulator of urban density, natural light, natural ventilation and privacy.
- All the retail buildings and apartments have a setback whereas a few residential villas and service buildings lack them. Compared to the previous point, most villas seem to have illegally occupied the side setback spaces, leaving little space only in front and back elevations. This phenomenon has significant implications on the forged urban morphology, since the “float-in-the-plot” villa has been transformed into a form of attached housing.
- An opaque plot wall is only present in most of the residential villas and service buildings, reinforcing the absolute boundary between public and private space.
- Side elevations have an equal distribution of being either blind or open in both the high-rise and low-rise buildings. With regards to the villas, this finding agrees with the two first points of this table in terms of the usage of architecture solutions that turn side setbacks to obsolete. Regarding the surrounding high-rise buildings, the presence of sikkak (the narrow pedestrian openings) is justifying this point.

**Table 2:** Architectural elements on buildings per land use (source: authors).

Architecture	Elements	Retail+ Residential	Retail+ Offices	Retail (Hotel)	Residential	Government	Religion	Education
Roof	Flat	60	1	4	88	4	4	3
	Multiple	0	0	0	15	0	0	0
	Metal Cladded	0	0	0	0	0	2	0
	Cornices	3	0	0	30	0	0	0
Façade	Recessed Ground Floors	50	1	4	0	0	0	0

	Projecting facades	30	0	2	71	2	4	3
	Glass	25	1	4	20	0	0	1
	Tiling	25	1	4	15	1	0	0
	Plaster	36	0	0	88	3	4	3
	Brick	1	0	0	30	0	1	1
Windows	Pivoting	30	1	4	8	1	1	1
	Sliding	35	0	0	87	3	4	3
	Arched	5	0	0	70	0	2	1
	Louvered	0	0	0	23	2	3	1
	Metal frame	60	1	4	103	4	4	3
	Balcony	25	0	1	60	0	0	1
Entrance	Porched	5	0	1	50	3	3	0
	Stepped	19	0	3	68	2	2	0
	Levelled	41	1	1	35	2	2	3
	Shaded	31	0	4	16	1	1	3
	Wooden Door	0	0	0	37	0	3	1
	Glass Door	60	1	3	1	2	0	0
	Metal Door	0	0	1	65	2	1	2
Ornaments	Windows	7	0	0	40	1	1	2
	Entrance	13	0	1	76	0	3	2
	Roof	31	0	2	43	2	4	2
	Plotwall	0	0	0	52	1	1	2
	Balcony	7	0	0	30	0	0	1
	Handrail	2	0	0	36	0	0	0
	Recessed filling	25	0	1	0	0	0	0

Amongst other findings, table 2 shows that:

- Apart from the high-rise buildings, even residential units have big glass facades. These glass facades were a result of adopting western villa styles. However, most of these glass facades were covered by curtains, restricting indoor-outdoor connectivity. This controversy is a result of the conflict between the western villa style and the Emirati culture. Throughout the block, the choice of façade finishes does not correspond to a certain architecture style but rather on personal preference.
- A plethora of ornaments were found on the buildings of this block, which was a result of fusing various architectural styles. Ornaments were found from entrances to roof and facades to even the plot walls. Often the choice of ornaments for a building did not respond to a specific architectural style. Hence, it is often that buildings have ornaments inspired by different eras/cultures (i.e. neoclassic together with modern or post-modern styles). Such a display of design elements results in an architecture that lacks a specific language.
- Furthermore, lots of ornaments are also found on the high-rise buildings' elevations, in evidence of the lack of deeper understanding their role in the architectural vocabulary and of the sense of scale, thus emphasizing the paradox aforementioned.

### 2.3. Interpreting the findings

The results of this analysis focused on the quantification and consequently the demonstration of the contradictions originated on a sociocultural and spatial level by the swift and total transition of the housing typology from the Arabic courtyard model to the western villa. A first reading identifies this paradox at two levels: The urban one where public space is wasted (i.e. unnecessary sikkak) but individualism and privacy

are empowered through arbitrary interventions to the detached villa model, and the architectural one where the misuse of the “western” housing vocabulary contradicts with the prevailing cultural context; the Islamic daily patterns. In an effort to soften the controversy, the use of ornamentation with Islamic/Arabic inspiration is often exaggerated and misinterpreted, since it only serves superficiality and has long neglected any practicality that could pursue sustainability.

#### **2.4. The second shift; Back to the values of Arabic architecture**

The Abu Dhabi Urban Planning Council, the major regulating authority in the Emirate with regards to architecture and planning guidelines and development control, in acknowledgement of this paradox (Elsheshtawy, 2016 and Kyriazis, 2017) have recently proposed a set of alternative guidelines to housing developments (especially the ones associated with the national housing program). After importing a cultural pillar into the local sustainability accreditation system (“Estidama”), they called designers and developers to openly consider returning their housing projects back to the courtyard house model and the multiple virtues of the organic and compact Arabic urbanism (UPC, 2017). The “Fareej” would be an opportunity to reuse traditional ideas under contemporary technologies. However, this shift would now need a lot more than a mere authority brochure to make an equal impact.

### **CONCLUSION**

The presented research project has focused on the visualization and documentation of the obvious: A paradox that is experienced on a daily basis and has become so fundamental and natural that has turned into a young but solid stereotype. The prevalence of an imported housing typology that stands against any national and cultural identity, any religious custom and any climatic condition, only to serve as a social imaginary. What was a choice for modernity has turned a fundamental right into a display of financial wellbeing and a spatial segregation tool.

Part of this undergraduate research initiative and architecture studio work conducted by the author aim exactly at the analysis, demystification and deconstruction of this stereotype, and its replacement by the values of locality, synthesis and openness.

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i A quantitative and qualitative analysis of this transition is the main subject of the second ongoing undergraduate research aforementioned.