
The Interaction between Tradition and Modernity in Contemporary Architecture of Persian Gulf States: Case Study of United Arab Emirates

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Abstract: *Region and culture have been influence in shaping the past architecture space. In contemporary has been attention to these issues in some works. The objective of this study is to analysis the interaction between Tradition and Modernity in contemporary architecture and its relationship to the vernacular and cultural aspects, as evident in the case of the United Arab Emirates. This paper seeks to answer the key question how vernacular elements are reflected in the works of between 90s and 2000s? This research focuses on vernacular, cultural aspects influencing architecture through a comparison between 1100 works. This research methodology will carry out historical analysis for eight works, in the UAE, using comparative analysis. Through descriptive, qualitative and spatial analysis for these case studies, eight of these will be chosen, one each from the traditional and contemporary categories, to be tested in the empirical part of this study. As a result most which honors traditional physical forms has largely been limited to visual elements and traditional facades.*

Keywords: *Tradition, Modernity, Contemporary Architecture, United Arab Emirates*

1. INTRODUCTION

Tradition is that part of culture that is transmitted from one generation to the next one. To some extent, a society's identity is based on its traditional heritage. This is the reason for which many societies place a great value on heritage. In the Arab world, tradition is not a single layer of past cultural manifestation; rather, it is multilayered complex. Tradition is not the theoretical part of one's heritage or the wishful claim of renewal of old grandeur and past glories. It is instead, the hard task of not only recognizing but also creatively transforming those values that have accumulated over centuries, and through this process incorporating contemporary values that did not exist before (Kultermann, 1999, p. 4). Traditional architecture offers the greatest potential for the development of a viable contemporary regionalism of consistent high quality, capable of providing for many building types, both old and new. The potential diversity from the sheer richness of the heritage diversified over centuries of continuous development (Abel, 2000, p. 171). Therefore Architecture is a discipline that can reflect different cultures.

Relying on imported building styles in the UAE and the Arab World may be referred to lack of trust in the traditional methods as they are symbols of poverty and retardation. The successful implementation of Western ideas depends on the assumption fostered in people in the Arab world that western methods are more appropriate (superior) to their own. Perhaps the most insidious affect has been their loss of self respect & identity (Al-Zubaidi, 2007, p. 22). In order to understand the role of traditions and its influences in shifting building identity towards modern architecture, this study will discuss the concept of architectural vernacular focusing on the process of continuity and change as main forces between modernity and traditions in United Arab Emirates.

A series of literature examples of studies specifically addressing sustainable architecture exist (Rakhshan, Friess, & Tajerzadeh, 2013) (El Amrousi & Shakour, 2013) (Abdelsalam & Mohamed Rihan, 2013). Al-Zubaidi estimates the sustainability potential of traditional architecture in the Arab world, with particular reference to domestic buildings in the United Arab Emirates (Al-Zubaidi, 2007). Abdelsalam focuses on two key issues; firstly: study and analysis of the mentioned

sustainability trends in housing design, secondly: assessing and analyzing the impact of these trends on shaping the identity of the Arab city (Abdelsalam & Mohamed Rihan, 2013).

In Chapter 3 Abu Dhabi Mosque Development Regulations council identify the vernacular architectural language of Emirati mosques by analyzing the identity, layout, components and character of a number of the UAE's historic mosques (Abu Dhabi Urban Planning Council, 2012). Eben Saleh attempted to describe the architectural form and landscape as a harmonic entity in vernacular settlements of southwestern Saudi Arabia (Eben Saleh, 2000).

This study attempts to identify the elements of vernacular architecture in the UAE traditional architecture, reread its effect and explain its manifestation quality (invitation) in the modern architecture. And so these questions can be answered: how vernacular elements are reflected in the works of between 90s and 2000s? What are the architecture main features and the concepts of this country?

Problem of this research is the need to formulate a set of guidelines for design policies and design decisions for contemporary architecture, especially public buildings with regard to the potential of vernacular innovations in modern architecture.

2. LITERATURE REVIEW

2.1. Cultural Context

Culture is not composed of elements which can be disassembled and re-composed: culture has to be lived. Cultures mature and sediment slowly as they become fused into the context and continuity of tradition. Culture is an entity of facts and beliefs, history and present material realities and mental condition. It proceeds unconsciously and cannot be manipulated from outside (Pallasmaa, 2007, p. 131).

2.2. Vernacular Architecture

The concept of the vernacular as a progenitor of urban and architectural ideas has been a subject of debate over three decades. To look for urban or architectural ideas based on the actual arrangement of spaces and buildings of a locality or a region, increasingly becomes an answer. In a sense, the vernacular combines the best of both worlds: it is both conservative and radical, pragmatically based in experience while also being a source for new urban and architectural solutions. Urban planners, urban designers and architects turn to the vernacular to reestablish contact with the fundamental nature of arrangements of spaces and building, and to re-create a basic urban and architectural form. It is a return to the roots, or fundamentals. The vernacular represents a truth of fundamentals and is more at home with the landscape (Eben Saleh, 2000, p. 588).

2.3. The Relationship between Tradition and Vernacular Architecture

Architects, planners, and urban designers need to analyze and select aspects of local tradition and vernacular architecture—functional relationships determined by social customs and behavior, formal geometries, materials, colors, ornament—to be incorporated cleverly in what would be a “modern” building (Al-Kodmany, M. Ali, & Zhang, 2013, p. 39).

2.4. United Arab Emirates

The United Arab Emirates, sometimes simply called the Emirates or the UAE, is an Arab country located in the southeast end of the Arabian Peninsula on the Persian Gulf, bordering Oman to the east and Saudi Arabia to the south, as well as sharing sea borders with Qatar and Iran. The United Arab Emirates was established in 1971 as a federation of seven emirates. Few nations on earth have experienced more far-reaching change over the past few decades than the United Arab Emirates. This federation of seven ancient Emirates - Abu Dhabi, Dubai, Sharjah, Ras al-Khaimah, Umm al Qaiwain, Ajman and Fujairah - is not only the world's fourth largest oil-producer, but also its richest state per head of population, and the new commercial hub of the Middle East (Wikipedia).

2.4.1. Architecture in the United Arab Emirates before 1900

While human settlement in Abu Dhabi Emirate can be traced back to the Stone Age (6,000–3,200 BC), it was not until the Bronze Age (3,200–1,300 BC) that larger settlements began to form. These settlements, which developed in the inland oases and coastal areas, comprised of animal herders,

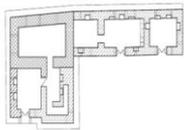
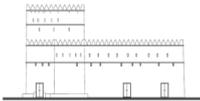
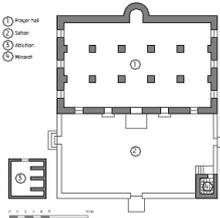
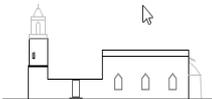
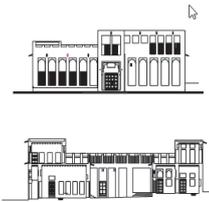
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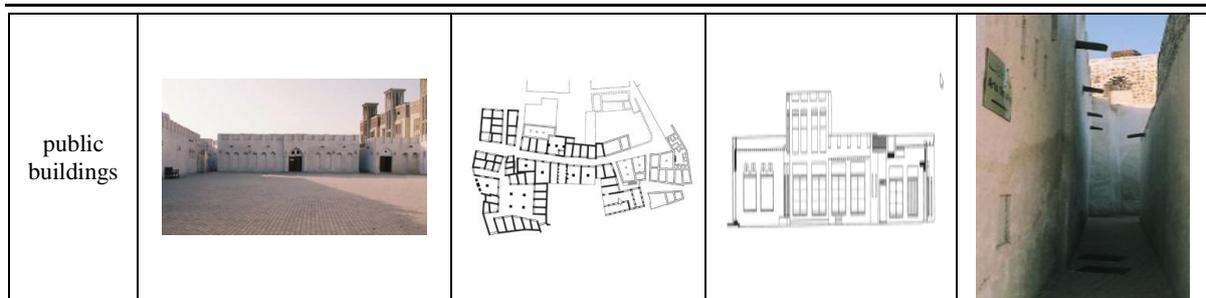
farmers and fishermen. Inland, the first large settlement or town was Al Ain. Its inhabitants were engaged in agriculture, copper mining, smelting and exports through what is known today as the port of Umm Al Nar, near Abu Dhabi. The settlement of Umm Al Nar, located off Abu Dhabi Island, was established between 2,500 BC-2,000 BC. This was a permanent settlement comprising of well-constructed buildings built from cut and dressed stone. Circular tower-like tombs of dressed stones were found in several locations along the coast and Al Ain Oasis. Evidence from these sites suggests that trade evolved from pottery production to the exploitation and export of copper. Goods were traded between settlers and surrounding civilizations such as Mesopotamia and the Indus Valley. During the Iron Age (1,300-300 BC), the water irrigation system known as ‘falaj’ evolved, based on similar techniques developed elsewhere in the region. The falaj is an ancient irrigation system that utilizes underground water supplies. Historically, this system provided a relatively constant water supply all year round, leading to a change in settlement patterns as people followed the route of this water source. Historically, construction techniques were based on the available local materials, such as mud-brick and stone, supplemented by Arish (palm-fronds) within Al Ain, and coral, stone and Arish within the coastal settlements (Abu Dhabi Urban Planning Council, 2012, p. 18).

2.4.2. Architecture in the United Arab Emirates 1900-1930: Continuity of Traditional Architecture

Most buildings in the United Arab Emirates, until the 1940s, were to be categorized under five types: defensive, religious, residential, markets and public buildings. Most of the buildings in the United Arab Emirates dated from the 18th and 19th century, because most of the urban settlements referred to that era. Even buildings that were erected in the early decades of the 20th century as forts, houses, or schools were built in the traditional way (Al-Zubaidi, 2007, p. 95) Table 1.

Table 1. *Categorized of buildings in the United Arab Emirates and its features*

name	image	plan	Sections & Elevations	Architectural details
Defensive Buildings				
Religious Buildings				
Residential Buildings				
Markets				



2.4.3. Modern architecture in UAE

The early stage of modern architecture in the United Arab Emirates began in 1930 when the first airport was built in Sharjah; few new buildings were erected in 1940s. The modernization process accelerated in the 1950s and 1960s when expectations of oil production attracted the sight of western companies to the region as a future source of energy and its potentiality for un-preceded opportunities and investments. These expectations were enhanced with the emirates rulers' wide visions towards the future and their persistence to be in the same modern levels that the neighboring counties began to experience at that time (Al-Zubaidi, 2007, p. 93).

2.4.4. Architecture in UAE 1990-2010

After the first spate of modern buildings had completely altered the urban landscape of the UAE in the 1970's, a renewed longing for something more traditional was felt. The Government became increasingly aware that the potential loss of the country's heritage should be checked. Renovation projects were started on major old buildings still sufficiently intact to be restored, and architects began to incorporate at least some traditional elements in their new creations (www.uaeone.com – Last accessed 14-07-2005). The late nineties and the emergence of the new millennium witnessed qualitative changes along with the trends of globalization, yet more tending to reveal the region identity. Some projects became an identity to the UAE that witnessed innovative audacious projects such as Burj Al-Arab (Arab Tower), twin towers, Al-Nakheel project (Dubai) and Baynoona tower (Abu Dhabi). Regardless our agreement or disagreement, these projects became landmarks for the location where they were. There is some of the best regional architecture built in the UAE, designed by western and Arab architects trying to create an alternative to the prevailing international models (Kultermann, 1999, p. 173).

2.4.5. Vernacular Architecture in UAE

Much of the UAE's traditional vernacular architecture developed in the 18th and 19th centuries in response to specific social and environmental conditions; houses, mosques, market places and fortified buildings were shaped by the interconnected influences of tribe and trade, in addition to answering basic needs such as shelter, worship and employment. Courtyard housing typologies were generally utilised, which were designed to allow public interaction for male members of the household (within a majlis), while preserving the privacy, and therefore dignity, of the female family members. In addition to the domestic architecture regularly found, fortified palaces and mosques were the predominant typologies for permanent structures (Abu Dhabi Urban Planning Council, 2012, p. 19).

2.5. Important Traditions in Contemporary Architecture of UAE

Traditional architecture in the UAE was based on modifying ambient environment to protect the occupants. Protection was needed from dense solar radiation, extreme temperatures, high humidity and dusty winds. The potential of sustainability in the architecture, especially houses, in this region emerged through modifying and getting adapted to environmental factors, in order to create a comfortable internal microclimate. Climate was a major factor in the formation of traditional architecture, where several responses to climatic conditions can be found: court yard houses and Arish (houses built of palm tree leaves) in the coast districts and some oases. Tents were the traditional home and shelter for the Bedouins in the desert, and stone houses with pitched roofs in the mountains (Al-Zubaidi, 2007, p. 2). Traditional architecture in the UAE is a direct result of the impact of the mixture of nationalities of people with different cultural motivations. Therefore, the architectural character distinguishes by its simplicity, durability, and adaptability to cite elements from different cultures. Some elements that were added to the local concepts in order to define its style and character

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were developed to cope with the specific traditions and demands of the society under the umbrella of Islamic thoughts and philosophy (Bukhash, 2000, P.34).

2.5.1. Mashrabiya

The contemporary interpretation trend which introduces a successful approach for the marriage of traditional Arabic building practices and modern technologies represents an integrated trend. In producing a sustainable design, this trend takes the advantages of latest advancements and fuses them within the framework of heritable elements. Accordingly, this trend introduces the most appropriate approach for the contemporary local identity. The concept of mashrabiya, which is discussed in this research through a number of projects in the region, is a perfect example of the creative reinterpretation of the traditional and vernacular elements (Abdelsalam & Mohamed Riham, 2013, p. 171) Fig 1.



Fig 1. The traditional mashrabiya (Wikipedia)

2.5.2. Tent

The tent was the traditional dwelling for nomads (Bedouin) in the Desert region. The Bedouin tent was the most famous kind of house that people used long ago. It was a useful and adaptable structure made of goat hair, sheep wool, or camels' hair made not by professional weavers but by the women of the family as required. Thus, the tent is called "Bait al Sha'ar" meaning "the House of hair". The tent is designed in a way that can fit both hot and cold weather (Al-Zubaidi, 2007) Fig 2,3.

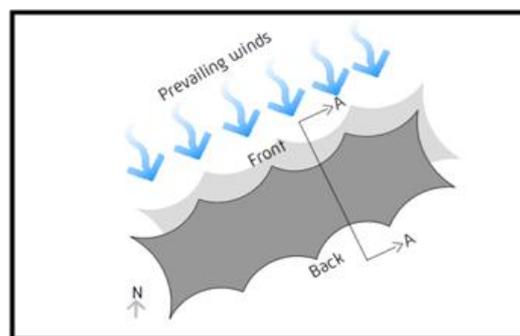


Fig 2. Top view of a summer tent showing the prevailing wind direction (Abu Dhabi Urban Planning Council, 2012)

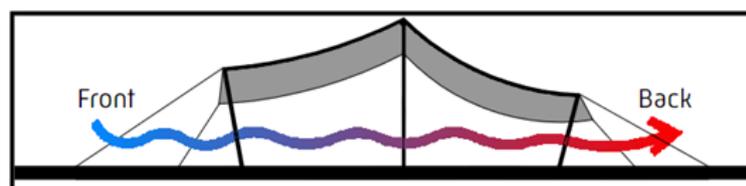


Fig 3. Section A-A showing the prevailing wind direction inside a summer tent (Abu Dhabi Urban Planning Council, 2012)

2.5.3. Central Courtyard

The courtyard house is commonly used in hot regions, including the Arab World, for its environmental and social advantages. This type was adequate for buildings in the UAE harsh climate; it was used in castles, rulers' residences, and houses (Al-Zubaidi, 2007)Fig 4.

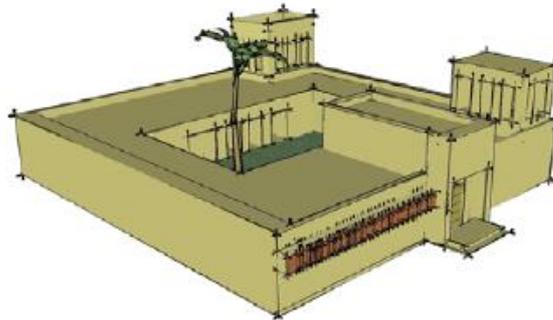


Fig 4. Central Courtyard perspective (Al-Zubaidi, 2007)

2.5.4. Material Availability

The geographical context determined the type of materials utilized in the construction of a monument, or even of a village in its entirety. The mountains provided rock and thorn trees ; in the plains it was more rounded stones from the river beds, and/or brick as well as thorn trees and palms; along the coast, coral was put to use (Samar Damluji, 2006, p. 211). Traditionally, Emirati buildings were constructed with materials drawn from the surrounding environment. These materials ranged from coral, stone and mud through to palm fronds and animal hair (Abu Dhabi Urban Planning Council, 2012, p. 26).

2.5.5. Ornaments

Generally speaking, there is no ostentatious decoration and it is not a major concern. This fact means that it has been of marginal interest, a field of little importance or one for a smaller or more intimate study. Among the mosques researched, only a few offer a small amount of ornamentation; this shows itself in a number of ways (Samar Damluji, 2006, p. 219).

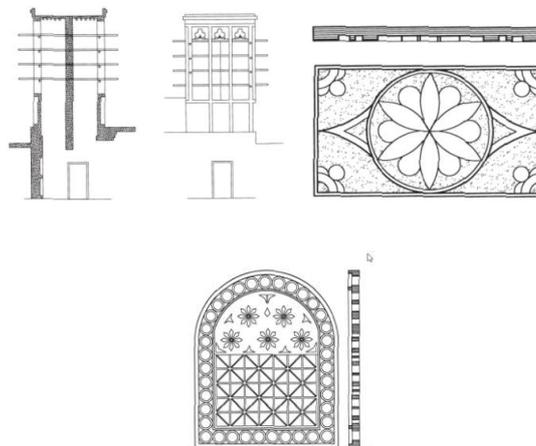


Fig 5. decoration (Samar Damluji, 2006)

3. METHODOLOGY

The research method is historical analysis of architectural form and details. To narrow down the subject and for the better and more accurate analysis 10 case study were examined in the context of the works(selected from 1100 works) to have a background for future studies. The present paper is placed in the applied research in terms of the objective. In this paper a descriptive-analytical method

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is used based on the library and field studies (open observation and architectural details). For the analysis of tables a comparative study is done.

In this section, the elements of tradition and modernity in the case samples of UAE modern works between 90s-2000s are discussed. For this purpose, all kinds of works and the features derived from the previous studies in library resources and the internet are marked in the related tables. To analyze the principles of tradition architecture and the effect of its elements on the modern architecture, a number of works consisted of all the great works influenced tradition elements in UAE between the 90s to 2000s decades. These works were named in specialized journals or academic papers. 1100 works were selected and for each of them the following table was marked. See table 2. Due to the size and capacity of the paper, 8 detailed works(1- Baynunah Tower 2- Al-Ain Region Celebration Halls 3- Faculty Housing 4- General Secretariat of Municipalities 5-Zayed University Women's Campus 6- American University of Sharjah 7- House1 8- House 2) are included in the text. However, the final conclusions are related to the all analyzed works of UAE modern architecture. Since the objective of this research is the analysis of samples with vernacular approach based on properties of sample design context, can guarantee the internal validity of the research. Based on a theoretical model to explain the interaction of architecture and cultural context is built. To enhance research validity coefficient, it is necessary to select samples, to achieve multiple sources of evidence, as they belong to the best-known examples of contemporary architecture to be considered.

Table 2. *The syntax analysis of vernacular elements*

syntax analysis form	Massing and articulation	Geometry of mass (form)	Openings	windows	shape	Architectural details and feature	Arches	Building structure	Type of roofing system	
		Building envelope			Type of glazing				Columns	Building structural design
		Type of articulated facades (base, body, roof)			Articulation and depth				Balconies	Techniques of construction
		Orientation of mass		Location within the mass	porches					
		Base relation with the ground line (pedestal)		doors	shape					
		Mass location within the plot of land			Materials					
		Building setback from front boarder line			Relationship with street					
	Facade design	Solidity and transparency	Roof and parapets	Roof shape and parapet design		Facade materials	Material integrity	ornaments	Geometry	
		Building colors		Roof lines relations with adjacent buildings					Material texture	colors
		Articulation and depth		Functional integrity of roof line					Material reflections	Material
		Rhythm and scale								
		Unity of facade elements								
	Relationship with context									

4. CASE STUDIES

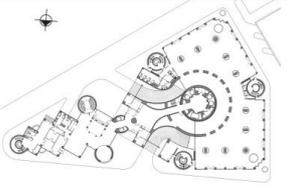
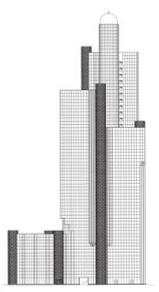
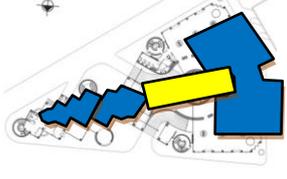
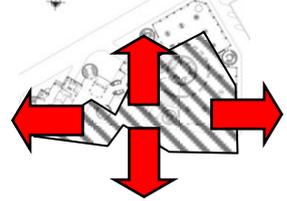
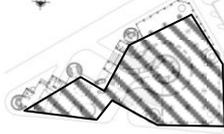
4.1. Baynunah Tower

The various functional components of the Baynunah Tower have been incorporated into a cluster of three towers all encapsulated by a deep blue tinted reflective-glass curtain wall. Towering high above the Abu Dhabi skyline, the towers are complemented by ornamental clad white cylindrical shafts on the façade. Interiors have been elaborately designed in a modern Arabesque style, utilizing quality materials and finishes. According to the architects, ‘contemporary architectural thought, attention to detail and the quality of workmanship epitomizes the Baynunah Tower, creating the focal point of a high level of achievement and confidence in the progress of the UAE and the capital city of Abu Dhabi.’ The three principal blocks rise to heights of 24, 30 and 36 story above ground-floor level. They cluster round a central cylinder shaft which extends to a height of 160 meters (Samar Damluji, 2006, p. 48).

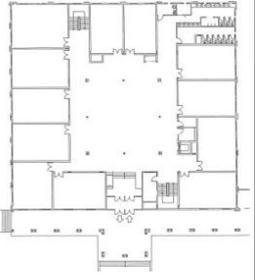
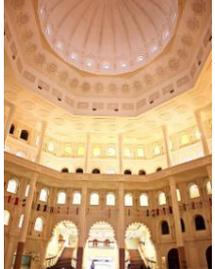
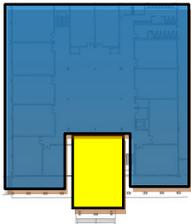
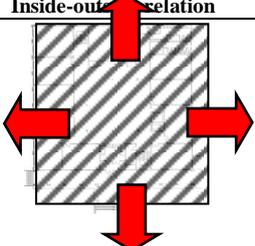
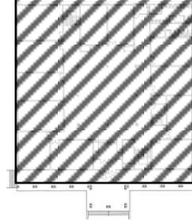
4.2. American University of Sharjah

This project site, branded University City, is located a good 10 kilometers from Sharjah, and encompasses the University of Sharjah, a complex of higher-education institutions, and the co-educational American University of Sharjah (AUS). The design of the American University was

entrusted to a French architect, Françoise Gambert, and the construction was carried out by the Saudi Binladin (SBL) Group, who also designed the Binladin mosque (north of the MainBuilding). The project was completed in less than two years, with the construction carried out in eleven months. The design follows a grand axis which connects the two city highways (the main Sharjah Airport Road and the Industrial Area Road) via an avenue 100 meters wide and 4.5 kilometers long. A symmetrical plan neatly arranges all the faculty and school buildings along the central axis, and they are set back to accommodate the arcade that opens onto the main court. The main administration building of the AUS is centered on this axis. The approach avenue terminates in a flight of red granite stairs, 75 meters wide, which lead to a raised plaza with neo-classical urns on either side of the balustrade parapet (adding a Versailles touch to the fountain vista). In addition to the faculty buildings, the campus has separate dormitories for male and female students, faculty housing, residences for the deans and chancellor, a sports complex, tennis courts and parking (Samar Damluji, 2006).

		name		Type		Location		Date of construction													
		Baynunah Tower		contemporary		Abu Dhabi		1995													
		Plan		Sections & Elevations		Images		interior													
Architectural Drawings																					
syntax analysis form		Massing and articulation		Openings		Architectural details and feature		Building structure		Geometry of mass (form)	M	windows	shape	M	Arches	-	Type of roofing system	M			
										Building envelope	M		Type of glazing	M		Columns		M	Building structural design	M	
										Type of articulated facades (base, body, roof)	M	Articulation and depth	M	Balconies	-		Techniques of construction	M			
										Orientation of mass	M	Location within the mass	M		porches	-					
										Base relation with the ground line (pedestal)	M	doors	shape	M		Facade materials	ornaments	Material integrity	M	Geometry	T
										Mass location within the plot of land	M		Materials	M	Material texture				M		colors
										Building setback from front boarder line	M	Relationship with street	M	Material reflections					M		
		Facade design		Roof and parapets		Roof shape and parapet design		M	Material integrity	M	Geometry	T									
						Roof lines relations with adjacent buildings		M		Material texture		M	colors	T							
						Functional integrity of roof line		M				Material reflections		M	Material	M					
						Solidity and transparency	M	Inside-outside relation						Built up/ open		Architectural details					
						Building colors	M														
Articulation and depth	M																				
Rhythm and scale	M																				
Unity of facade elements	M																				
Relationship with context	M																				
Spatial Analysis		Zoning analysis		Inside-outside relation		Built up/ open		Architectural details													
																					

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		name	Architect/Planner	Location	Date of construction										
		American University of Sharjah	Gambert Engineering Consulting and Decoration	Sharjah	1997										
		Plan	facade	Images	interior										
Architectural Drawings															
syntax analysis form	Massing and articulation	Geometry of mass (form)	T	Openings	wind ows	shape	T	Architectural details and feature	Arches	M	Building structure	Type of roofing system	T		
		Building envelope	T			Type of glazing	M		Columns	T		Building structural design	M		
		Type of articulated facades (base, body, roof)	T			Articulation and depth	M		Balconies	-		Techniques of construction	M		
		Orientation of mass	T		Location within the mass	T	porches		T						
		Base relation with the ground line (pedestal)	T		doors	shape	M								
		Mass location within the plot of land	T			Materials	M								
	Facade design	Building setback from front boarder line	T	Roof and parapets	Roof shape and parapet design	T	Facade materials	Material integrity	T	ornaments	Geometry	T			
		Solidity and transparency	M			Roof lines relations with adjacent buildings			T			Material texture	T	colors	T
		Building colors	T			Functional integrity of roof line			T			Material reflections	M	Material	T
		Articulation and depth	T												
		Rhythm and scale	T												
		Unity of facade elements	T												
Relationship with context	T														
Spatial Analysis	Zoning analysis		Inside-out relation			Built up/ open		Architectural details							
															

5. DISCUSSIONS

Recognition and acknowledgement of tradition can take the form of interpreting the essence, in meaning and function, of certain elements of architectural heritage and abstracting them in modern designs. It can also take the form of reusing, or recreating, some of these architectural elements in a contemporary design to convey a traditional image (Al-Zubaidi, 2007, p. 22). Facades of newly constructed heritage are punctuated in colorful and geometric decorations within the traditional reinterpretation in the architecture around the square. The use of screens as vertical veils in different patterns replace applied ornament and transform the whole building into one big ornament. This is

coupled with the introduction of new forms that are to construct a new heritage, and signify wealth, in the Arab city announcing its emergence as a global competitor. Here the reflections of star architects and emerging mega projects was evident, the trend of using screens on a massive scale to construct an Arab identity and adhere to environmental design was dominant (El Amrousi & Shakour, 2013, p. 10) Table 3.

Table 3. Summarize of tables

		Massing and articulation	Openings	Architectural details and feature	Building structure	Facade design	Roof and parapets	Facade materials	ornaments
Building Name	weight	20%	20%	11%	8%	17%	8%	8%	8%
Baynunah Tower	T								2
	M	7	7	1	3	6	3	3	1
Al-Ain Region Celebration Halls	T	6			2	6	2	3	2
	M	1	7	1	1		1		1
Faculty Housing	T	7	1	1	3	6	3	2	3
	M		6	1				1	
General Secretariat of Municipalities	T	6	4	1	2	5	3	2	3
	M	1	3	1	1	1		1	
Zayed University Women's Campus	T	4	4			6		3	
	M	3	3		3		3		3
American University of Sharjah	T	7	3	1	1	5	3	2	3
	M		4	1	2	1		1	
House 1	T	3	1		1	1	3		
	M	4	6		2	5		3	3
House 2	T	4	3		1		3		
	M	3	4	1	2	6		3	3
Total core	T	0/66	0/29	0/33	0/42	0/60	0/71	0/50	0/54
	M	0/34	0/71	0/67	0/58	0/40	0/29	0/50	0/46

6. CONCLUSIONS

The new architectural works in UAE have uprooted the usage of some vernacular forms such as Arish made of palm, defense towers which once possessed significance in function. New construction which honors traditional physical forms has largely been limited to visual elements and traditional facades. The new structures are made of concrete and steel and have taken forms that are often not indicative of the culture of UAE. These new elements lack designs of symbolic importance in relation to the place and space, and so weaken the interaction between tradition and the modernism. Several attempts are to use traditional architectural elements in the design of modern buildings in the United Arab Emirates. These Approaches are affected design of the massing and articulation, facades, and roof more than opening and architectural details.

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