
Case Study Paper

Urban morphology and behaviour mapping in Abu Dhabi's public spaces.

Informality as an interaction of cultural context and urban form.

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Abstract

Abu Dhabi's galloping growth is shepherded by a stringent set of standards and guidelines for both the public space and the built environment. Its urban form that follows the main characteristics of most new Arab cities (automobile dependency, modernist grid and monotonous suburban sprawl) has already started gaining the attention of scholarly research. However, that research body still misses a critical analysis of the dynamic interaction between the qualitative quotidian practices and the produced urban form. Such an analysis could shed light on the relationship between socio-ethnic groups and urban space programming and appropriation.

This paper presents findings from an ongoing research program for the search of a link between the design and use of public spaces, and the surrounding urban morphologies within the diverse sociocultural context of Abu Dhabi. Fourteen public spaces of the city (both formal and informal ones) were examined in terms of their typology, functions and social profile, as well as for the correlation with their urban context and the public transportation networks. In situ methodological approaches such as behavioural mapping, impromptu discussions and photography were applied in order to shed light on the intricate particularities and qualitative properties of public spaces. The mapping of the public spaces was conducted under the prospect of comparability, either between themselves or with future studies in similar cities in the Middle East and beyond.

The research program – albeit not completed yet – amplifies the importance of informality as an indicator of urban health and as a reminder of insufficient urban planning programming and urban design practices. It also underlines the importance of preserving or even pursuing informality as a catalyst of social cohesion, cultural flexibility and inclusivity. Furthermore, certain urban morphologies, related more to a higher and a more organic degree of pedestrian connectivity seem to optimally contribute to a more diverse and successful public space.

Future phases of the program could also reveal relations on the metropolitan scale with regard to mobility, public transportation needs, strategic approaches and the need to control urban sprawl and densities. This case study of Abu Dhabi could then become of valuable guidance on rewriting public space design manuals and on exporting urban doctrines.

Keywords

Abu Dhabi, informal, urban morphology, public space, culture

1. Researching Abu Dhabi**1.1. Introduction to context**

While often dwarfed next to Dubai in terms of scholarly attention, Abu Dhabi is emerging as a paradigm of a new Arab city in the Gulf region. Its transformation from a seasonal fishing post to a contemporary global hub – as fuelled by the oil boom – has been achieved under a consistent and pragmatic political will (Kyriazis, 2017). Its five decades of history, although shallow compared to most cities, were enough for the city to grow to the extent that construction moratoriums were issued twice in order to allow the city life to catch up (Elsheshtawy, 2008). Automobile dependency still dominates and shapes the urban form (Montagne, 2016) resulting an expensive sprawl against both urban fronts: the desert, with a post-modernist suburban lifestyle and significant horizontal segregation; and the waterfront, through constant reclamation on a sensitive marine ecosystem and the production of exclusive expatriate-based resort-like developments (Kyriazis, 2018). Catalyst to that is the effort of the city to keep up with the latest trends on global urban design and real estate developments while pushing for high targets in tourism that led to emphasis on security and public space privatization (Samarrai, 2018). The urban and architectural scales are controlled by a meticulous set of manuals, partially aligned with the local cultural and climatic conditions. Especially with regard to the public space, it is the analytical manuals, privatization and an almost Orwellian level of security that generate a sense of over-management (Kyriazis, 2019).

1.2. The research project

In a city that was created in a tabula rasa for the sake of modernization (Al Fahim, 2014) and where the built environment is renewed to the degree of risking to eradicate even those shallow layers of modernist history (Menoret, 2013 and Elsheshtawy, 2008), its citizens – expatriate in majority – are a permanent testament of its temporality. A labor/sponsor based residency system underlines this property. However, they provide a pulse to the city as well as a seemingly uninterrupted collective memory that ensures the continuity of its existence (Elsheshtawy, 2019). The public space is their field of action. The street, the square, the alley; a space of interaction without which urban life would not exist (Lefebvre, 2003).

It is this space and its interaction with its users and the urban form that is under research. A city-wide behavioural analysis that would highlight social parameters and could associate them with the urban morphology. In this light, the research team combines forces from two institutions and three disciplines: Architecture, Sociology and Human Geography. Documenting the behavioural profile of public spaces and superimposing it to the urban form and mobility patterns would answer questions related to the genesis and impact of informality, to the consequences of zoning practices and to the interconnectivity of the public realm (Kyriazis, 2019).

Quotidian urbanism has been studied thoroughly in many cities for the last decades, following the influence of Jane Jacobs, William Whyte, Kevin Lynch, Jan Gehl and others. Middle Eastern cities were also examined, as their pre-modern, organic urbanity highlights the importance of randomness and spontaneity (Elsheshtawy, 2011; Robabecchia, 2018; Alawadi, 2019). However, this meticulous study of Abu Dhabi is critical, as the role of informality is tested – and eventually becomes essential – against a condition of over-management and overregulation. Aspects of Abu Dhabi's daily patterns have already been studied (Alawady, 2019; Elsheshtawy, 2019), but this project includes the entire metropolitan area, aspiring to juxtapose the intricate urban morphologies with the public space users and their diverse sociocultural backgrounds.

1.3. Methodology

Achieving comparability and representativeness within that mega-scale was a key target for the research project. Comparability regarded the formal/informal dualism, different neighbourhoods of the city as well as with other cities in the region. This hypothesis raised the issue of splitting the city to major parts with distinct urban/social characteristics.

The analysis of urban and statistical data would precede the social/behavioural one. However, since access to any statistical and demographic information was limited, the observational part should involve an upgraded empirical analysis, supported by impromptu discussions with public space users (instead of a formal questionnaire). Simultaneously, the role of photographic documentation became even more critical for both parts. Public space photography was a sensitive issue concerning privacy and socio-cultural particularities and special techniques were applied (Kyriazis, 2019).

Observations covered morning-afternoon-evening time slots for both weekdays and weekends, thus adjusting to quotidian religious practices and labour patterns. Furthermore, due to the extreme climatic conditions of Abu Dhabi, most daytime observations were conducted during winter. They include description of actions, brief profiles of public space users (nationality, occupation, commuting means and origin etc.) and mapping of their pathways and actions within that space. This mapping would get superimposed to the urban analysis for a spatial visualization of the observational grid. Furthermore, those profiles will be used to reveal mobility patterns at the metropolitan scale.

2. Analysis - Observations

2.1. Selection of studied public spaces

A first effort to pinpoint all existing public spaces in Abu Dhabi highlighted the volatility of the informal ones as well as the necessity of acquiring information of any elusive yet remarkable activities around the city (figure 1).



Figure 1: Map of public spaces in Abu Dhabi. Formal spaces are in green (sized after their importance/impact) and informal spaces are in red.

For addressing issues related to observations' time management and comparability without compromising its scientific principles, the city was divided in seven zones with distinct morphological characteristics and ethnic distribution (in numerical order): the downtown superblocks, the mid-island low-rise villas, the institutional Maqta channel, Khalifa City, the industrial suburbs, the desert sprawl suburbia and the waterfront expatriate free zones (figure 2).

Two public spaces were chosen from each zone; a formal and an informal one. This way, observations from all fourteen spaces in various timings and days would secure a representative enough reading with comparable results. Special attention was given to issues that could affect the objectivity of the observations, such as the intricate climate of the region and major religious events (i.e. the holy month of Ramadan).

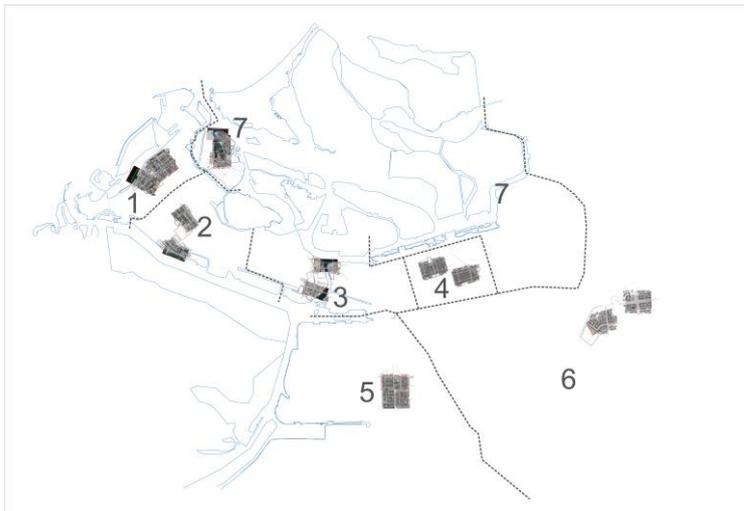


Figure 2: Map of the selected public spaces to be studied.

2.2. Urban Analysis

A layered urban analysis was necessary both for comprehending the morphological distinctions that the aforementioned grouping induced and for becoming the basis upon which the behavioural mapping will take place. All fourteen chosen spaces are depicted in thematic layers of urban morphology, namely Built-up space, building heights, land uses (ground floor and overall), pedestrian space and road network (figure 3).

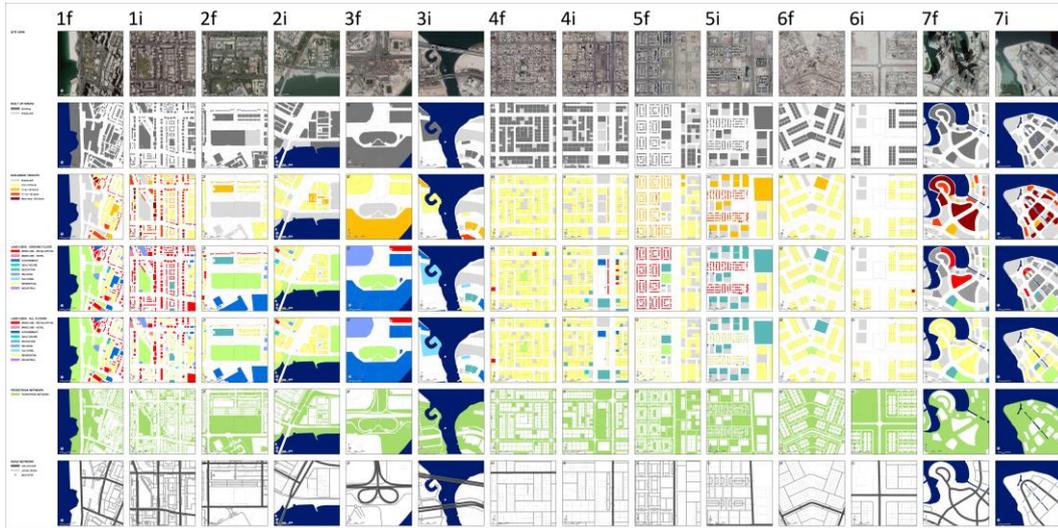


Figure 3: Urban thematic maps of the fourteen assigned spaces (as numbered in Figure 2 with “f” and “i” standing for Formal and Informal). All mapped areas are 1x1km in dimensions.

The theme maps alone reveal patterns of relations between the studied spaces and their urban surroundings. Density, heights and plots' shapes consist a first level of reading related to walkability, accessibility and porosity.

3. Observation findings

3.1. Behaviour mapping

While only few observation slots remained at the time this paper was authored and most of the digital mapping process is still under way, several significant findings have already emerged. These findings are a fruition of activity observations, qualitative information from the public space users and from the mapping itself.

The research team sought for both formal and informal activities – regardless of the formal/informal status of the site itself. This distinction was elusive (especially in formal spaces) but clear once occurred. However, activities on informal public spaces also display timing and usage patterns, thus highlighting the absence of formal public spaces or the absence of specific uses/activities within them, in major parts of the city.

However, this project focuses not only on the public spaces themselves, but also on their relation with the surrounding urban morphology. The mapping of pathways and activities (figure 4) focuses more on the latter.



Figure 4: Mapping of pathways and activities of public space users (source: authors).

3.2. Formal Public Spaces

The formal public spaces chosen in this project can be divided into three categories, in terms of design sequence: The ones that were created and designed at an ad-hoc basis, like the famous Corniche downtown park (as part of the waterfront regeneration). The parks with plots allocated by Master Plans that got developed later in an isolated fashion (like the parks of areas 4f, 5f and 6f shown on figure 4). Lastly, the parks that were created in residual urban spaces i.e. within highway junctions (like the park on area 3f).

Observations showed that in most of these public spaces, informal actions were less than few and they were usually hinging on alternative use of sport courts (due to overpopulation in other, popular sports), small-scale and time-limited occupation of playground equipment (by sleeping Municipality workers or smoking youth) and arbitrary car parking at unpaved edges of the areas. Security personnel assigned by the Municipality however rapidly quench most of these cases. Other surprises like trash collectors searching on bins and users of quad-bikes inside grass-landscaped areas were rare.

Regardless of the size and importance of the public spaces, it seems that their success depends on the presence of flexible areas within them; areas devoid of a program, areas open to experimentation, adaptation and customization. In the studied cases, this is manifested by open areas of greenery that can easily adapt to cultural particularities and habits (i.e. family pic-nicks) but also absorb extra demand in popular segments of the park (i.e. football courts etc.). Furthermore, such spaces are also capable of accommodating local-scale attractions introduced by individuals that rent their needed space from the Municipality. Thus, some revenue comes back to the local authorities (or to park managers) and at the same time, initially unforeseen uses enrich activity options.

3.3. Informal Public Spaces

The informal spaces chosen are either underdeveloped (or not developed at all) public spaces or undeveloped private plots. While many informal spots of Abu Dhabi have established some kind of permanence – albeit a delusive one – many others disappear or appear at surprisingly frequent rates, underlining a condition of temporality. Practically speaking, figure 1 would need constant updating.

Informal spaces usually serve in absence of formal alternatives in a neighbourhood. Therefore, they highlight the deficiencies of the preceding master plans in supplying public spaces in general or specific facilities that could address demand from local residents. This also indicates a gap on the usually top-down urban planning processes and their inability to reflect on the social dynamics of the city. Abu Dhabi – as well as many of the Arab cities of the Gulf – is highly ethnically diverse with the indigenous population occupying only 19% of the total (SCAD, 2018), the majority being from the Indian subcontinent (India, Bangladesh and Pakistan). In this light, it is not surprising to witness so many spontaneous cricket games (especially in sectors 3, 4, 5 and 6). Other sports performed are volleyball (mostly by Indians in the 5i spot), badminton (on pedestrian sidewalks of the 1i area) and football.

In most of these cases, informal gatherings function as community condensers. The Indian volleyball gatherings on area 4f resonated as friends' meetings after working hours, to end up in running neighbourhood championships. Similar settings appear in cases like the Bangladesh square (Elshehtawy, 2019). Such post-work ethnic gatherings also display a sense of resistance to the daily routine, to labour anxieties and transience.

However, the expatriate communities are not the only ones that express their quotidian anxieties this way. The local youth (including other Arabs) also try to unwind themselves and socialize in manners related to automobiles and engine sports in general, a phenomenon frequently met in the region (Menoret, 2013). The Bateen beach (sector 2i) is a hot spot for impromptu jet ski races during the sunset. To this direction, the informal cases of the areas 4i and 6i are indicative of the consolidation of the private car as a personality extension as well as of the profound impact of the monopoly of this means on shaping the city's urban morphology. The car is used to shortcut big-sized, dirt/sand-covered city blocks and to stop at canteen stations for drive-through dinner orders. Canteen stations are an upcoming trend in Abu Dhabi: apart from following major events in the city (about sports, concerts and the like), they also make self-organized groups, occupying informal public spaces next to highway entrances to the residential suburbs. This trend is so vibrant that the Municipality have been trying to settle the canteen groups in temporarily formalized areas.

3.4. Illegality Vs Informality

The use of unfenced vacant private plots and the performance of several actions in formal public spaces have often been the subject of criticism from local authorities. After raising issues of security and socio-cultural particularities, informal behaviour is sometimes demonized or even penalized (Gulf News, 2018). However, wide scholarly research has shown that security issues truly arise in the absence of street life and informal urbanism (Jacobs, 1961). In addition, such measures tend to strengthen the sense of segregation and temporality and actually function as a catalyst for informality and a reply to oppression (Menoret, 2013).

Interestingly, there is also the issue of a proper definition of informality and illegality by both local authorities and designers. This became apparent on many of the formal spaces through the popular action of barbecuing. While barbecuing is a favorite task for many park visitors (mostly with an Arabic background), the official parks' signage was clearly prohibiting it. Some of the parks were later equipped with special built-in barbeque stations but the signage remained. Fishing is another popular but occasionally controlled activity. Conversations with Pakistani and Indian fishermen found in the 7i site implied a matter of public space clarity and quality in terms of preserving a high-end image of a public space and matching it with the "values" of its urban surroundings.

3.5. Informality and Space Privatization

The need to issue special permits for photography in the sectors 2f and 7f reminded the research team of other impactful space-generating forces of the city: the very real estate players, developers and private stakeholders. Public space privatization under the theoretical approaches of neoliberalism and the motivation of surplus value generation (Lefebvre, 2003) by definition oppose the notions of openness and inclusivity (Harvey, 2013). They deny any element of surprise and improvisation as they advocate for a fully monitored "surgery room" urbanism with predefined experience provisions. However, observations showed that public space privatization eradicates (but does not completely annihilate) informal activity, as even in the most diversely designed spaces users' unpredictability and the need for customization are inherent properties with universal value.

Further support to this approach comes from an incident prior to the observations' launch. The initial choice for the 7i sector was a countrywide known kite surf beach in Yas Island. Situated on the opposite side of the Yas global entertainment hub (that includes venues like the Yas Marina F1 race track, the Ferrari World and the Warner Bros World amongst other luxurious destinations), this beach was an informal haven for kite surfers and the like. It offered ideal wind alignments, easy access from a nearby highway and zero development; a setting naturally expressing the sense of freedom associated with these sports. However, in ignorance to the dynamics and potential of that attraction, permits were granted for private water sports facilities that fenced the area. Consequently, kite surfers stopped using that beach, all informal activities ceased to exist and the city lost a unique attraction.

3.6. Behaviour and the urban morphology

Most of the aforementioned cases and behaviours were the products of in situ observations. However – as aspired from the early stages of this project – their juxtaposition to the urban context (figure 4) should provide valuable insight on the dynamic interface and their intertwining properties that form or provoke each other.

Density does not seem to be associated with any kind of activity (formal or informal) apart from increasing the total amount of flows and the rate of unpredictability. However, its morphological manifestation makes a difference. The use of podiums on high-rise buildings on Reem Island (areas 7f and 7i), fully occupied with car parking spaces for the towers' dwellers, strips the street level of any life and produces elevated areas of exclusivity. Thus, pedestrian flows and activities of any kind in adjacent spaces are limited and channelled, with fewer opportunities for spontaneous socializing. In full contrast, on-street retail maximizes the randomness of pedestrian flow (areas 1i, 4i, 5i). Similar to that dualism, formal parks with single entry point like the Umm Al Emarat park (2f) are isolated from the urban fabric and have more predictable flows.

Moving to lower densities, the key sociocultural notion that shaped the urban morphology is privacy. The public-private dualism becomes more absolute and distinct than ever in the form of the plot walls that surround the “floating” or setback villas. The sikkak (pedestrian alleys) in between are the only reminder of an obsolete morphology and typology of Arabic residential architecture, the courtyard house. The transition was rapid and tailor-fitted the urge for display of an upgraded social status (Kyriazis, 2018). Public spaces 4f, 6f, 4i, 6i and even 2f are surrounded by such housing plots and pedestrian flows to/from them is streamlined through the sikkak in between.

However, low density, extreme zoning and sprawl pay their own price. Large plot sizes and oversized street corridors increase distances and discourage walking. Even in the ideal temperatures of the Abu Dhabi winter, the majority of people drive small to middle distances to reach a park. Furthermore, rigid zoning practices left suburbia devoid of local retail shops. This was a documented (by discussions with users) shortage that if restored, it could attract more people from greater distances.

3.7. Urban mobility

While the research phase of mobility in the metropolitan scale is still in process, several key points have emerged, using the interviews and part of the urban analysis.

Most (but not all) of the selected public spaces are serviced by means of public transportation (bus in particular). However, really few of the users select the bus to visit them. Cars consist the majority of means used, with walking, bicycle and motorcycle following.

With regard to distances travelled on purpose for a park visit, it became clear that formal spaces' users may travel bigger distances – even across the city. Apart from the cases of 1f (Corniche) and 2f (Umm Al Emarat park) that are country-wide known public spaces and may attract large numbers of people from afar, smaller parks also attract people from afar due to the existence of specialized facilities (i.e. football courts etc.). Opposed to them, most trips to/from the informal spaces come from their related neighbourhoods. Exceptions to this observation are activities related to community bonding, like the volleyball matches of area 5i.

4. Conclusion

What started as a humble attempt of this research team to document and map some of the already familiar public spaces of Abu Dhabi, ended up as a revelation. Under the seemingly permanent flashy wrapping of curtain wall urbanism and exclusive (in every sense) architecture, there lies a layer in flux. People, citizens and visitors that live, work, move, socialize and get entertained. They acknowledge transience as a constant and they resist on a daily basis. It is that quotidian struggle that is showcased.

The urban form contributes as an inherent piece of the condition. It highly affects urban mobility, quantities and qualities of public space and behavior within. The public spaces are the recipients of this quotidian anxiety. Therefore, proper planning, programming, designing and maintaining of these open spaces is key to the ability of a city to absorb all those vibrations and clashes.

Informal urbanism and informal behavior are major components of this relation. They are urban and social health indicators, as adaptation, improvisation and surprise are elements that produce and ensure openness, democracy and inclusivity. They imply smart and active citizens, in an era that "smart" only addresses corporate interests (Koolhaas, 2014). Informality is not theodified but becomes essential in disclosing weaknesses, shortages and environments of exclusion and conflict that otherwise would remain elusive.

The behavior mapping of Abu Dhabi's public spaces, apart from the value of documentation itself, is a project that may argue in favor of updating the existing city manuals and guidelines with filling in a gap between urban governance and a textbook yet sterile urban morphology: the social layer, the people, both owners and users. A pathway towards actual social sustainability. This may include an argument for a shift towards program flexibility. Neighborhood and public space design could invest in introducing participatory processes. The city should develop reflexes that would enable it to harness the values of informality. Furthermore, this project could set a paradigm for research on behavioral mapping and social mobility in all Arab cities in the region and beyond, with similar sociocultural and climatic conditions.

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