

# The Effects of the New Development Projects on the Urban Macroform of Dubai

## A Syntactic Evaluation

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**Abstract**

*The paper presents the results of an ongoing project aiming to examine effects of the new development projects and transportation proposals on urban structure of Dubai, UAE. Dubai has witnessed phenomenal changes in the last decade due to new development and investment projects including new bridges, roads, metro and waterbus systems. A major concern for the city is to forecast the effects of new major development projects and housing estates: Could the new development projects such as The Palm Jumeirah, Downtown Burj Dubai, Business Bay, Dubai Marina, and Dubailand be integrated with the city of Dubai? Are these new proposals respond to spatial potentials of their local context? The research aims to answer some of these questions by giving quantitative descriptions on the built space of Dubai using "space syntax" methodology. Rapidly positioning itself as a global business center, the city of Dubai itself is an interesting topic. Furthermore, syntactical analysis of the city could provide a quantitative description, a unique picture of the city to help delve into the above mentioned questions. The impact of economic growth on the city's spatial configuration would also be discussed via comparatively analyzing the urban network of today and the changed network based on the Dubai Strategic Plan-2015 (DSP).*

**1. Introduction**

From a fishing settlement to a cosmopolitan twenty-first century urbanized land, Dubai underwent a massive period of growth in only fifty years. An outstanding example in the world, Dubai is engaged primarily in a process of urban generation and property development forms a cornerstone of its development strategy. In order to create a striking new image for the city, iconic architectures such as Burj al Arab, and global scale mega-projects such as Palm Jumeirah and the Burj Dubai are being constructed and are symbolizing the national identity. As the urban development has been shaped by

mega projects, the spatial integration of these new projects within the urban layout becomes crucial. This paper aims to use space syntax methodology to comparatively examine urban growth and spatial integration of the city for today and for future.

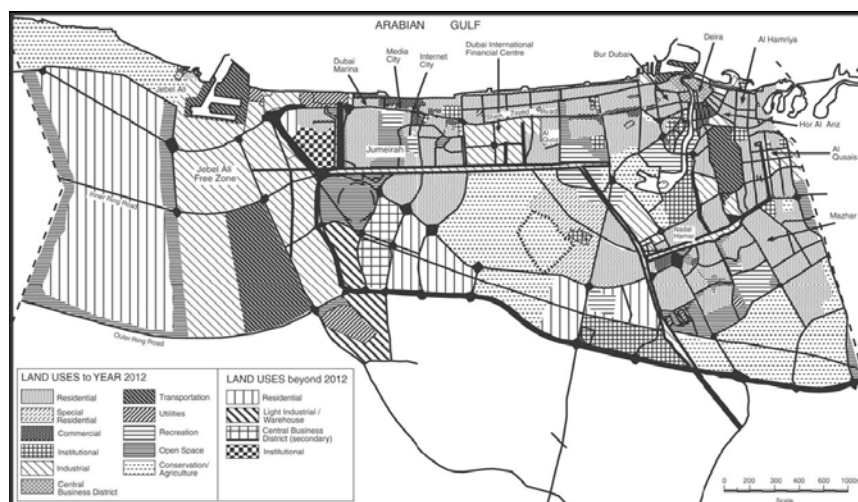
## 2. Urban origins and urban planning

The urban development of Dubai has been shaped through different phases of economical growth transforming from pre-industrial to industrial and post-industrial status in only fifty years (Pacione, 2005).

Starting with the twentieth century, Dubai branched into three distinct areas. Deira was the largest and the main commercial centre. On the western bank, Bur Dubai and Al Shindagha were separated by a wide stretch of sand called Ghubaiba. Al Shindagha, situated on a narrow strip of land separating the sea from the creek, was a small area and a main residential district, while Bur Dubai was the smallest settlement. In late 1950s, a master plan for Dubai was prepared for a period of compact growth with a new road system, a new town centre and zones of different land use areas. As the first bridge was constructed across Dubai Creek in 1963, most of the urban developments started to occur around the district of Deira. Since the construction of the Maktoum Bridge and following the formation of the United Arab Emirates, Dubai has expanded primarily towards the east. Thus, much of the urban development has sprawled incoherently on the outer fringes of the city and along the road to Abu Dhabi, transforming the city into a linear one (United Nations, 2005).

Dubai became the seventh emirate of United Arab Emirates in 1971. Within a period of 1970 to 1980, a planned suburban growth occurred and a new master plan for Dubai was conceived. Major transportation developments were planned to connect the city districts on both sides of the creek. Economic, social and physical transformation of the city and the major developments in urban structure continued via rapid urban expansion in 1980s. In the early 1990s, Dubai took a strategic decision to emerge as a major international-quality metropolitan.

The Dubai Urban Area Strategic Plan 1993-2012 was prepared to guide the economic and physical development of the city into the 21st century. One of the key challenges of the plan was stimulating co-operation between public and private agencies in their investments. The dynamics of the plan represented an effort to provide a spatial framework for urban growth by indicating planned land use structure. Not only leading tourism in region but also developing a business district within a globally important urban environment result a construction of a series of 'cities within the city' mega-projects. (Pacione, 2005). Figure 1 indicates the planned land use structure for the city.



**Figure 1**

*Dubai Urban Area Structure Plan 1993-2015*

Source: Pacione M., (2005), *City Profile: Dubai, Cities, Vol: 22, p.225-265, Elsevier Ltd. UK*

### 3. 'Cities within the city' mega projects:

Dubai's central strategy today is to establish itself as the region's hub of commerce, services and leisure. Central to this planned urban growth is the construction of a series of mega- projects that sometimes described as 'cities within the city' (Figure 2).



**Figure 2**

*Dubai Mega Projects*

Source: <http://www.belhane.com>

Principal among these mega projects are:

- Emirates Living: A community located in Dubai Marina, Dubai Media City, Dubai Internet City and The Mall of the Emirates.
- Dubai International Financial Center: A multi-billion dollar real estate development on 45.000 m<sup>2</sup> of desert in a financial free zone.
- Jumeirah Village: Mixed land uses covering 811 hectares with landscaping, connected parks and boulevards.
- Dubai Marina: Covering 4,5 kilometer squares, it is the largest man made marina in the world creating a promenade along the entire waterfront.
- Festival City: Located along the shores of the creek it comprises of fifteen residential communities with leisure, entertainment, and shopping facilities.
- Palm Islands: The artificial islands of Palm Jumeirah, Palm Jebel Ali and Palm Deira each with a mixed-use land development. As the palm tree had for centuries been a key source of food and shelter for the people of Dubai, palm shape is selected to be islands' concept. Each island is surrounded by a crescent land that forms a water-breaker. The Palm Islands are located off the

coast of The United Arab Emirates in the Persian Gulf and added 520 kilometers of beaches to the city of Dubai.

- Business Bay: Aimed to make a global commercial and business centre it is located between Sheikh Zayed and Al Khail Roads on the creek side.
- Downtown Burj Dubai: A mixed-use land development project covering around 200 hectares area. The area is dominated by the world's tallest building, Burj Dubai Tower, and includes important projects such as The Old Town Island and The Dubai Mall.
- Dubailand Theme Park: A mega project, located behind the Emirates Road stretching from the back of Emirates Hills down almost to The Deira Creek, aiming to become world's most ambitious leisure, tourism and entertainment destination.
- International City: A mixed use development comprising 21 00 residences for 60 000 people.
- Al Maktoum International Airport: Currently under construction near Jebel Ali, it is planned as the world's largest passenger and cargo hub.

#### 4. The syntactic evaluation of the Dubai macroform

The social and economic urban value is influenced by physical and spatial factors. Integration of spaces within an urban network can enhance or diminish these physical, social and economic benefits. Dubai's developing network holding the urban layout together, is the most critical factor in the city. Using space syntax approach to analyze the existing situation in Dubai and comparing it with the changes that is planned in Dubai Strategic Plan-2015 (DSP) could be remarkably helpful to explore the urban layout integration and how it could change in time.

##### 4.1. Syntactic Analyses of the Existing Situation in Dubai

When the existing situation in Dubai is analyzed globally and locally (figure 3) **Jumeirah** district and the **Business Bay** are identified as the most integrated parts in the urban context.



**Figure 3**

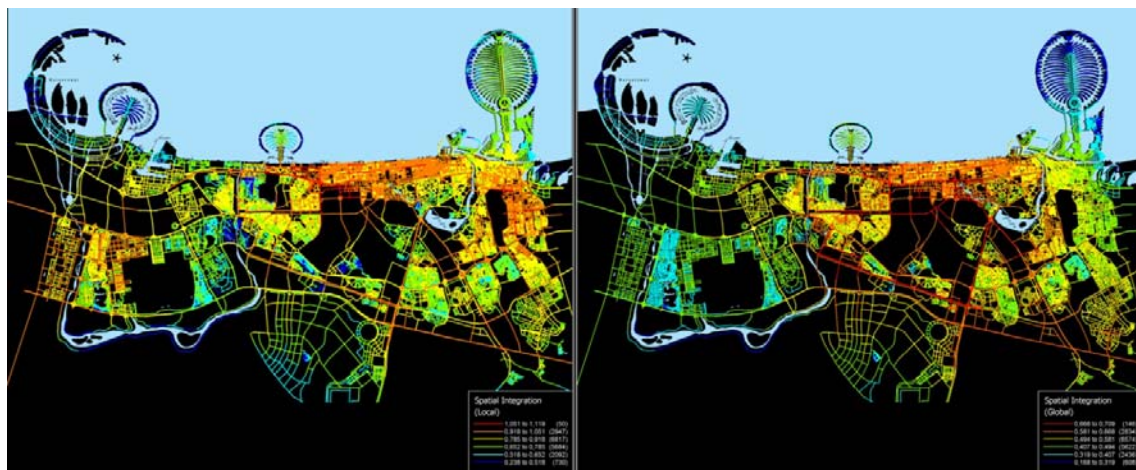
*Spatial Integration according to the Existing Situation in Dubai (left local, right global)*

The **Garhoud** area which is the continuation of the old city center and today's entertainment and commercial core, is also integrated in the urban structure. As Jumeirah is a proper and low dense settlement, Business Bay is an important central business district. With Burj Dubai and Downtown Dubai this center sets a good basis for high levels of urban activity and space use. In addition to these; Sheikh Zayed Road (E11) improves connectivity between local centers, mixes global and local movement and enhances movement economy. Main functions of city-wide importance are generally located along this axial. On the other hand, Palm islands (Palm Jumeira, Palm Jebel Ali) and Dubai Waterfront are segregated places in both local and global analysis. Based on global

analysis; **Deira** area, the first settlement and the old central business district, is interconnected to linear developing urban network. Al Quoz Industrial districts are highly interconnected along this linear growth. Ras Al Khor Road is a transition between city and countryside, yet more integrated when analyzed globally. Bukadra and Ras al Khor industrial areas are also defined as integrated spaces. Based on local analysis; Al Twar and Al Qusais districts are integrated and via Al Qusais Road connected to Sharjah and Dubai International Airport.

#### 4.2. Syntactic Analyses of the The Dubai Strategic Plan-2015 (DSP)

Jumeirah, Business Bay, Downtown Burj Dubai, Festival City of Garhoud Area, Al Quoz Industrial Area are defined as the most integrated spaces when analyzed both locally and globally (Figure 4). The main characteristics of these spaces vary due to their location and design strategies. **Jumeirah**, a coastal residential area with low rise private dwellings, produces a central area with high connections between the surrounding urban structures. **Business Bay**, a new urban center for business and social infrastructure, the location of this project as a newly developed central business district is selected to be the heart of the network. **Downtown Burj Dubai** is one of the most integrated parts, similar to **Al Quoz** industrial area that is surrounded by major roads increasing the areas' connectivity to the whole urban layout. According to the both Global and Local analysis; Palm Islands, Dubai Waterfront, Dubai Marina, Dubailand, Investment Park, Jafza/Jebel Ali Free Zone and International City (Mirdif) are segregated within the spatial context.



**Figure 4**

*Spatial Integration according the Planned Situation in Dubai (left local, right global)*

**The Palm Islands** and **Dubailand** are segregated spaces within the urban environment. **Dubai Marina** is also segregated, though it is currently one of the most active areas. According to global analysis, Al Garhoud, International Media Production Zone, Al Barsha, Motor City and Dubai Sports City come forward as integrated spaces. The interconnection of the Emirates Road and International Media Production Zone increases the integration to the city. Whereas based on local analysis, Dubai Industrial City, Dubai World Center, Deira, Al Qusais, Al Twar and Muhaisnah districts are the most integrated spaces.

**Dubai Industrial City** is locally integrated to surroundings comprising Jebel Ali Free Zone and Port, Dubai Investment Park, Dubai Techno Park and Al Maktoum International Airport. The grid alone brings the whole system of land uses into a structure which has a higher linkage to the urban network. The interface between the airport and the industrial city has the highest integration level of the entire world center. **Deira**, being the old core of Dubai as an old central business district, sustains connection the whole spatial layout of Dubai. Interrelated to the Dubai International Airport on east side, Al Twar and Al Qusais districts provide linkage to Sharjah within a grid layout.

## 5. Conclusion

The mega-projects of Dubai are prepared in a piecemeal fashion and could be defined as creating "cities within the city". When examined syntactically within the context of the whole of Dubai, the places where these mega-projects are located appear to be segregated. However, each project within itself has distinct qualities as each has a unique concept that creates a major attraction for people. Even though these places for mega-projects appear to be segregated in syntactic examination of 2015 master plan, due to their attractiveness these projects have already started to create lively urban spaces. On contrary to the space syntax theory that puts emphasis on the form of an urban settlement, it looks here the movement economy is created via the mega-projects that have unique attractiveness of their own.

## 6. Next steps

Our work is still in progress and conclusions are, at this stage tentative. Our intension here was to primarily examine the peculiar characteristic of the urban structure of Dubai and put forward the comparative significance of variables derived from connectivity networks of the "city in city" development projects which in actual situation appear as patchworks of distinct areas, not as an integrated system but almost like a microcosm of patterns that are much more evident at the metropolitan scale. The structural features described in this paper may have deeper social&cultural origins and functions. Seyh Zayed road appeared to be the symbolic and functional spine of these patchwork of the city in city projects. This creates a corridor into a more significant reference for the city as a whole bear the marks of the traditional pressure between symbolic projections and functional connections or interfaces. To the extend that the results of this study hold more generally, we confirm the importance of including the density and/or different kinds of walking which will also support public transportation such as the underground system which is currently under construction. Finer grain research, including parcel information on land use as well as field studies of pedestrian movement are needed before analyzing the effects of design and planning decisions of 2015.

## 7. References

- Kubat Ayse Sema . 2001. "Istanbul: A Configurational Model for a Metropolis" *Proceedings*, 3rd International Space Syntax Symposium, Atlanta USA
- Kubat Ayse Sema, Kaya H. Serdar, Sari Firat, Güler Gülsen, Ozer Ozlem. 2007. "The Effects of Proposed Bridges on Urban Macroform of Istanbul: A Syntactic Evaluation". *Proceedings*, 6<sup>th</sup> International Space Syntax Symposium. Istanbul Technical University. Faculty of Architecture, Istanbul.
- Gabriel E. .1987. *The Dubai handbook*, Institute for Applied Economic Geography, Ahrensburg.
- Pacione M. 2005. City Profile: Dubai. *Cities*, Vol: 22, p.225-265. Elseiver Ltd. UK.
- United Nations . 2005. *Urbanization and the Changing Character of the Arab City*, New York.