

論文の内容の要旨

論文題目: **A study on urban street morphology from the traditional layout to the colonial and post-colonial developments of the city of Fez**

- Toward suitable street improvement in a specific Arabic context -

(フェズ街の都市街路形態の発展に関する研究—アラビア文脈におけるストリートの適切な改善に向けて—)

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Abstract: Urbanization worldwide is developing in a rapid pace that the majority of developing cities are striving to follow. This study focuses on a particular city in Morocco, Fez, hosting completely divergent urban fabrics being the unique and old city and the new town, which is rival and exotic, introduced during the French colonization of Morocco based on western urban style. Being the main catalyst of the shift from the traditional enclosure to an extreme exposure, colonialism has used planning as a tool to reinforce centralization of power, increase social segregation and express superiority. This research is aiming to define, through a comparison analysis of colonial and post-colonial streets spaces, how colonialism has affected today's urban space and planning practices in Moroccan creating dual spaces, then think about an innovative development of streets that matches the local atmosphere and today's socio-economic reality. The nature of this research is qualitative, supported by historic maps and statistical quantitative comparison analysis based upon 453 streets in three case studies. Statistical data analysis is based on computational tools to achieve accurate results that give an overall estimation of streets' conditions. The contrast and similarities between the areas are clearly traced and reveal several planning dysfunctions translated in urban space.

The thesis concludes by presenting a basic conceptual alternative as a hybrid structure that integrates both the traditional cul-de-sac and the grid network reflecting the advantages of both modern and traditional spatial features, respecting human scale and local values of the region.

Research frame and methodology

The research frame is limited to urban design qualities focusing on street scale at neighborhood level in the French ex-colonial center and its extensions that have been developed after the independence in 1956. Based on both quantitative and qualitative street analysis of three case studies, this research aims to explore urban streets in the new developed centers and compare it with the French colonial built center and investigate how western urban solutions brought during the colonization of Morocco have affected today's urban space. The focus is based upon three case studies of three specific neighborhoods, belonging to different sectors from the colonial and post-colonial periods. Historical maps analysis, field work, mapping and on-site survey are used as main tools for collecting the primary data of this research. Analyzing a total of 453 urban streets is presented as numeric and quantified data. Statistical data analysis allows to objectively compare the sites characteristics and physical features. Space syntax tools were used to compare the level of global and local integration and streets connectivity of the three cases.

Local traditional planning

Western and Muslim scholars have different positions regarding Islamic city formation, planning and development. each of them, analyzing from its own perspective and background. Western tended to understand Islamic cities using Greco-Roman model, referring to the political and economic features while Muslim link it mainly to socio-cultural and religious factors.

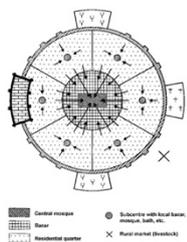


Figure 1. Islamic city model (Dettmann, 69)

The Islamic cities commonly represented in their organization the values of Muslim communities. Fez, being a model of Islamic city, has with distinction reflected the principles of the traditional urban distribution that characterized most of the Islamic cities. Among that, the principle of closeness and hierarchical privacy reflecting the concept of simplicity and modesty of life, avoiding any kind of splurge toward the exterior space. The interpretation of privacy may be different across societies but for Muslim it is a vital concept, synonym of women protection and tranquility. The functional structure of an Islamic city is defined by centrality, mosque, considered as the spiritual center in the intersections of the main active streets and surrounded by market places.

Colonial and post colonial planning

The city of Fez remained an intact unity until the arrival of French protectorate in 1912. The main character of French colonial urban vision is the principle of separation creating an extreme socio-spatial dualism between indigenous and the newly arrived colons. This dualism is also translated in spatial, social and economic levels where the economic center of the Medina is designated to poor lowest class while the western part of the town is for rich attracting high class population. Superiority is manifested spatially where wide streets and high building are for Europeans and wealthy people while indigenous occupy short buildings. Other concepts were introduced in the French town that were absent in the Medina, the concept of Plaza and large open spaces, the concept of "Boulevard". Street with portico system/ colonnades was also one of the policies of street design imposed by the colons in major commercial streets to guarantee a shaded sidewalk for pedestrians in hot summer.



Figure 2. Plaza concept in the new French town

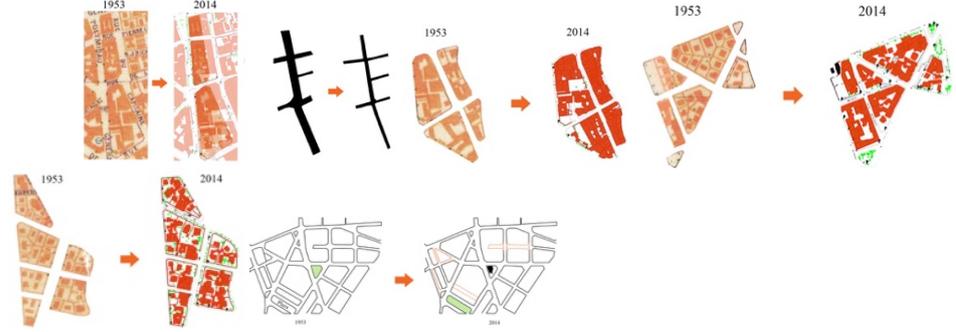


Figure 3. Densification, street and land use change

The shortage in housing has led to densification followed by many transformations in zoning and land use, especially affected individual villas that have soon been replaced by multi-story apartment buildings hosting a bigger number of residents.

Case studies and data analysis

Three case studies based on fieldwork that permitted the acquisition of accurate data regarding: streets typology, sidewalk dimension, street frontage use, business distribution, public transportation, node counts and connectivity, streets hierarchy, evaluation by form, width, Height of building facing streets, Green space and alignment of tree in street, On-street parking facilities distribution.

Data collection	Street seg.
Case I - Agdal	224
Case II- Narjis	95
Case III - Bensouda	134
Total	453

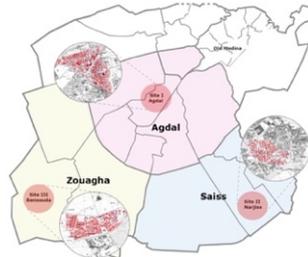


Figure 4. Location of case studies and number of studied streets in each case.

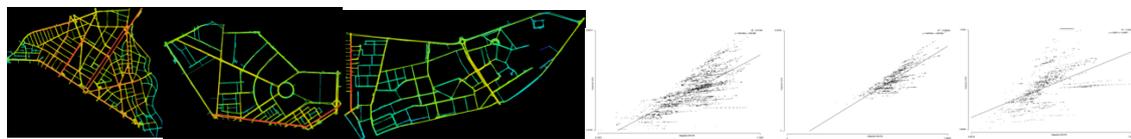


Figure 5. Axial maps of showing integration level in each site

Agdal (colonial center), a mixed use area with a concentration of services, administration and public facilities. Bensouda performs most weakly not only in terms of integration and connectivity but also land use diversity. This shows the unbalanced distribution of public and commercial facilities and commercial concentrating in the center.

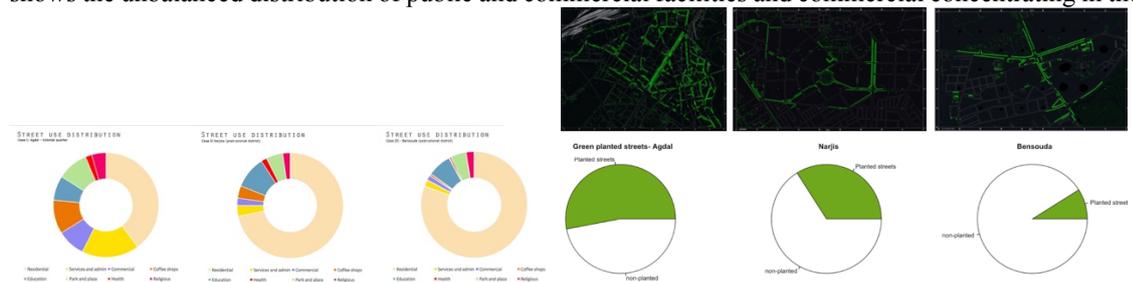


Figure 6. Land use distribution in the three cases. Figure 7. Mapping planted streets in the three sites.

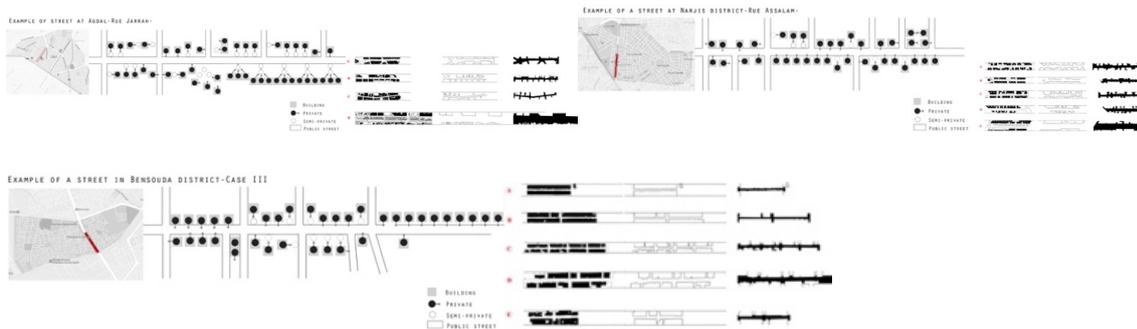


Figure 8. Entrance inter-visibility toward the street and street porosity

Analyzing architectural facade typologies and entrance inter-visibility and its inter-relationship toward the street, reflect outward oriented structure in the three cases studies with slightly different levels in contrast with traditional structures. Data of the 453 street segments can be summed in the following graph:

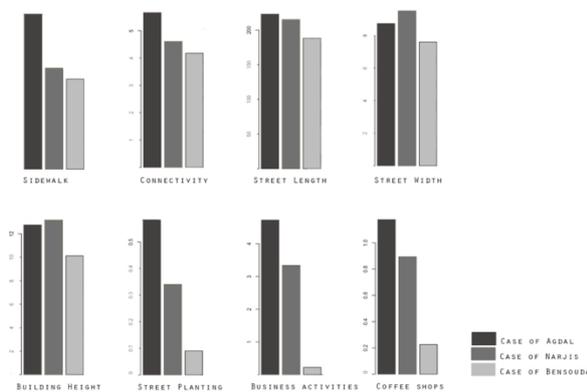


Figure 9. Mean values of different street variables in the three sectors

The analysis reveals analogies and contrast in three different districts. Streets in sub-urban areas clearly follow in form, the colonial style and regulations, however, qualitative analysis shows that these areas are facing major issues mainly marked by the crisis of centralism. The contrast between these segregated urban entities has increased the gap between different social divisions where the high and middle class locate in the center, while vulnerable population that forms the majority is occupying the periphery in informal settlements and high density quarters.

The main findings of this research is highly related to the research initial hypothesis. The impact of colonialism on Moroccan street space is highly considerable. The newly developed extensions are similar in structure however depend on the center and generating a real break in the city. The spatial disparity at street level between the traditional and colonial fabrics is evident, however, the qualitative observations and quantitative data comparing the colonial district with the planned post-colonial one by Moroccan developers, shows that the analogy between the two entities is less appearing in structure as urban planning in Fez is still highly influenced by the regulations elaborated by colonial authorities. Interestingly, as for the third case (Bensouda). What hold the attention is that the structure of informal settlement extensions is, more comparable to the one of the traditional Medina in terms of their high density, tending more to enclosure proximity and togetherness. Also, the presence of narrow private cul-de-sac streets as well as a low car ownership due to their low income might indicate the spontaneous choice of people of low income class, of enclosure, privacy and togetherness maximizing land efficiency to a large extent. However, this densification goes to the extreme, at the expenses of open living spaces and recreational areas, generating a suffocating and damaged street space, lacking of all aspect of comfort safety and livability. Analyzing architectural facade typologies and entrance inter-visibility demonstrated how western standards of urban planning have affected today's street life creating a new relationship between private and public, which is divergent from the traditional one.

Solutions and Alternatives

Prevailing over centralism in power and management can not be possible without a change in vision readdressing the basics of dealing with urban projects in a way that reduces the imbalance between different entities and equally considers all stakeholders in participatory approach that engages directly with the population. This requests a call for a new development on both architectural and street patterns level.

Based on both theoretical and practical on-site analysis, conceptual planning solutions and alternatives are presented as basic conceptual design frame for residential quarters, that controls mobility choice by limiting vehicle circulation in inner residential areas while bringing people closer to each other in planned open space.

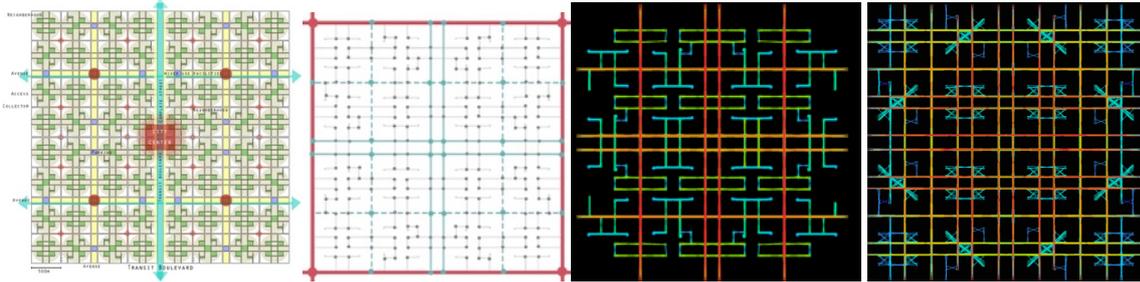


Figure 10. Conceptual design reintroducing street hierarchy.

Figure 11. Axial map analysis integration vehicle/ pedestrians

The model is a hybrid structure based on units of 500msq., supported by an adequate transportation system. The model is mixed use, merging the qualities of traditional streets based on the principle of enclosure, hierarchy of streets, strong social interaction, privacy, respects the human scale, with the potential qualities of the grid patterns in terms of integration, proximity and distance shortening as the need for connectivity is of great importance for a dynamic and active urban space. Axial maps analysis of this model demonstrates the high connectivity assured at pedestrian level, while vehicles circulation is limited to the main streets.

Even though car dependency is increasing in Morocco as shown statistically, it is still considered low compared to high income developed countries. This, in fact, makes it a fertile ground to develop an effective transportation system that can dominate mobility mode choice. Decreasing the need for cars and mobility implies the need for relevant and safe infrastructures and the abundance of public transportation modes. Another approach is pedestrian oriented planning favoring walking, considering it as a practical support to be linked with other transportation modes.

Furthermore, adjusting streets to users' practices is primordial. Facing the fact that poverty are dominant in urban space of the city, planning authorities should consider this important category of urban poor by meeting its requirements and integrating it in urban life instead of spatially exclude it. If their needs are not locally satisfied, the centers will still be invaded by street vendors as it is the main income source. This can be possible when the street answers to the special needs of the poor and encourage them to run small scaled businesses and structure their activities. Small scales activities business ignored by the local policies as the economic planning of the country is oriented more toward large scale capitalist activities. This is physically reflected on land use favoring large scale activities. The process of endorsing the magnification of these activities should gradually affect the land use and positively participate in reviving these districts. Last but not least, urban developers should be aware to the fact that streets are more than transitional spaces from one location to another, they should match the local socio-economic conditions and be dedicated to public use and belonging to all the people equally and to be controlled by them.