

CULTURAL MASTERPLAN FOR BAHRAIN

Parametric Models in Urban Planning



EXTENDED ABSTRACT

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1 INTRODUCTION

1.3 PURPOSE OF STUDY

This paper aims at presenting and reasoning strategies and solutions developed in the exercise conducted in the discipline of Final Draft, the academic year 2009/10, the LAPA atelier at the Ecole Polytechnique de Lausanne, Switzerland.

The project consisted of drawing up a masterplan for the Kingdom of Bahrain with the aim of reaffirming the country's identity. This "Cultural Masterplan", commissioned by the Ministry of Culture of the Kingdom of Bahrain, is seen as a complement to the existing 2030 Bahrain National Strategic Masterplan, completed in 2009 by SOM Architects.

1.4 JUSTIFICATION OF THE TOPIC

The urgency of this new plan is essentially due to the need to find solutions to the rapid cultural changes and developments which have happened in the Persian Gulf region. The countries of the Middle East, particularly the Arab Gulf countries have recently experienced intense urban transformations. Bahrain is not immune to this trend. In less than thirty years the landscape of the kingdom changed entirely; from a landscape composed of small coastal villages, palm plantations and genuine wilderness, to an extensive urbanization that has replaced much of the natural heritage.

Since 1970 the many landfills have altered the relationship of the country, and especially of its inhabitants, with the sea. The country seems bent on following the examples of Dubai, Abu Dhabi and Qatar to build several artificial islands instead of preserving their identity.

The ad hoc approach of recent decades has focused not on the integration of new developments with the existing urban fabric. As a result, there has been a shift away from models of historic fabric, both physically and conceptually, and that has weakened the local identity.

Another major challenge relates to the increase in population. It is estimated that by 2030 the population had grown to about 300,000 inhabitants, the question of where and how to accommodate this population increase will be central to the future planning of the country and at the same time, presents itself as an opportunity to reshape the current urban setting.

2 DEVELOPMENT

2.1 ECONOMIC SITUATION AND GEOPOLITICS IN THE GULF REGION

In general, there is a clear trend of globalization of cities in the Gulf who have been focusing on strategies enabling them to have characteristics cosmopolitan. The recent mega-constructions in the region put small cities like Dubai in the global economy and the tourism map.

In this context, Bahrain is still not a major destination, as it still occupies a position of lesser visibility compared with the rate of growth of other countries in the region. The financial capacity of Bahrain, although high compared to world standards, is much lower when compared with the UAE and Qatar.

However, Bahrain has been focusing on diversifying its economy to compensate for not having as many resources as other countries in the region and wants to take on a more sustainable model of development. This orientation can be clearly advantageous for the future development of Bahrain, namely the choice of a set of different strategies that, instead of mimicking those found by other countries in the region are assessed for their situation and their financial capacity, and giving it visibility and competitiveness through its specific regional context.

2.2 CHARACTERIZATION OF BAHRAIN

The second chapter proceeds to the characterization of Bahrain. In this chapter we analyzed Bahrain in the various sectoral areas: Economy, Tourism, Education, Environment and Urbanization. The goals for this phase consist of the general characterization of Bahrain and the sector, identifying its potential and its weaknesses. After understanding the context of the country, some strategies have been developed to address the problems identified and to promote the national objectives of Bahrain.

Economy:

The Economy of Bahrain is still considered heavily dependent on oil, despite the diversification started in the 80's. Anticipating the end of the oil in 2012, it is imperative to diversify and explore new markets.

Bahrain has a strong financial sector, contributing 30% to GDP, and making an effort to liberalize the economy by encouraging the government with positive results. Tourism in this context is seen as a growing market that may contribute 8% of the country's GDP.

Education:

Despite having been one of the first countries in the region to enter the public school compulsory for both sexes, Bahrain does not hold a dominant place in the region regarding the adoption of innovative and creative teaching strategies. At the top level there is a need to create synergies between universities and the labor market and bridging the disconnection between them.

Tourism:

The neighbors, Saudi Arabia is much less liberal than Bahrain. This makes Bahrain a preferred destination of the Saudi population which has increased the flow of tourists since 1983 with the construction of the bridge that joins the two countries.

Having been the only Gulf country continuously inhabited, Bahrain, with its well-documented and rich cultural history, may benefit in the context of cultural tourism by promoting its cultural heritage and historical sites.

Urbanism:

In recent years, there has been a dramatic transformation in the urban fabric of Bahrain, which despite some maintenance of their design to see the deteriorating quality of service provided (Ben-Hamouche, 2003). The area of the country increased 11% since 1960 because of significant length landfill and the introduction of a modern scale in the layout of new roads has changed the traditional urban fabric of the Islamic city, not adapting to the climate and its social context. The urban fabric is very different in its configuration, with weak links between the various urban areas.

Environment:

Bahrain is a unique case in the Gulf region due to its natural springs or allowed to flourish in this habitat type of weather. However, with depleting natural resources, most of the drinking water is obtained through desalination.

The absence of a public transportation system, forces the use of cars as the main transportation, and the massive use of air conditioning as a way of cooling the air, contribute to Bahrain having one of the largest ecological footprint worldwide. It therefore requires a collective awareness in changing behavior and the use of passive solar techniques for planning and construction of buildings.

2.3 MASTERPLAN VISION 2030

The third chapter of this work is dedicated to an analysis of the strategic plan 2030 Bahrain National Strategic Masterplan, produced by SOM Architects, which has been in operation since early 2009 and whose vision for the future of Bahrain was one of the main references for Project.

2.4 CONSTRUCTION OF THE MASTERPLAN

The fourth chapter presents the proposed Cultural Masterplan for Bahrain and explains the design options, including the specific objectives of the plan, strategies to use in order to achieve these objectives, and discusses the concepts of the proposal, particularly the concept of Compact City.

To achieve the goal of creating a model compact city we decided to pursue a filling-in strategy of the vacant urban voids within the existing boundaries set for the city, using a new morphological pattern that unites the fragments of urban fabric.

Accordingly, we decided to invest in the development of this new morphological pattern through a parametric solution. That is, a solution of a simplified set of adjustable rules, rather than a strict urban plan. One advantage of this type of solution is to allow the city to develop through generative processes, or a more traditional way. This is intended to give people a chance to develop their own urban environment and strengthen their cultural identity through the possibility of variation of architectural solutions from one set of rules recognized in the local context.

This type of solution will form a tissue based on the generic features identified by the morphological analysis and investigations, and at the same time enables you to develop an urban plan of evolution, which can be adjusted over time according to need.

From the morphological characterization and evaluation of several urban fabric of the country sought to draw conclusions that allow to contribute to the development of a proposal for a new morphological pattern, combining the best features found in the analysis.

Consequently, we defined rules and parameters that allow simplified scale and orient the grid system for defining rules for the implementation and construction on the lots, buildings and suggest settings for the distribution of cultural facilities in the new morphological patterns.

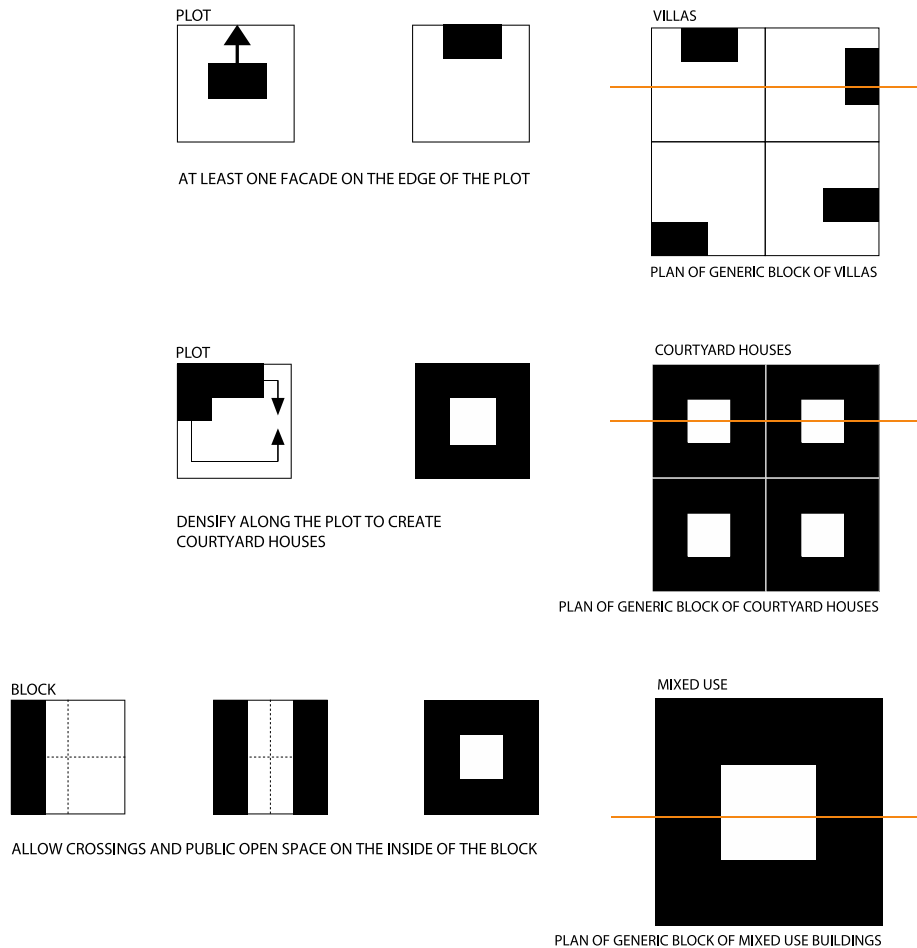


Fig. 1 — Rules for the creation of morphological units

The results obtained through application of the parameters developed a case study proved, in a comprehensive manner, positive aspects notwithstanding occur that could be improved, particularly in transition areas of medium density to high.

The application of patterns of low and medium density showed satisfactory results with a local road structure is well defined, forming environments with greater social interaction, and demonstrating improvements in adaptation to climatic conditions of Bahrain. The transition between low density and medium density patterns is carried out in an organic form, and allows a further densification of low-density model is easily articulated in the mesh.

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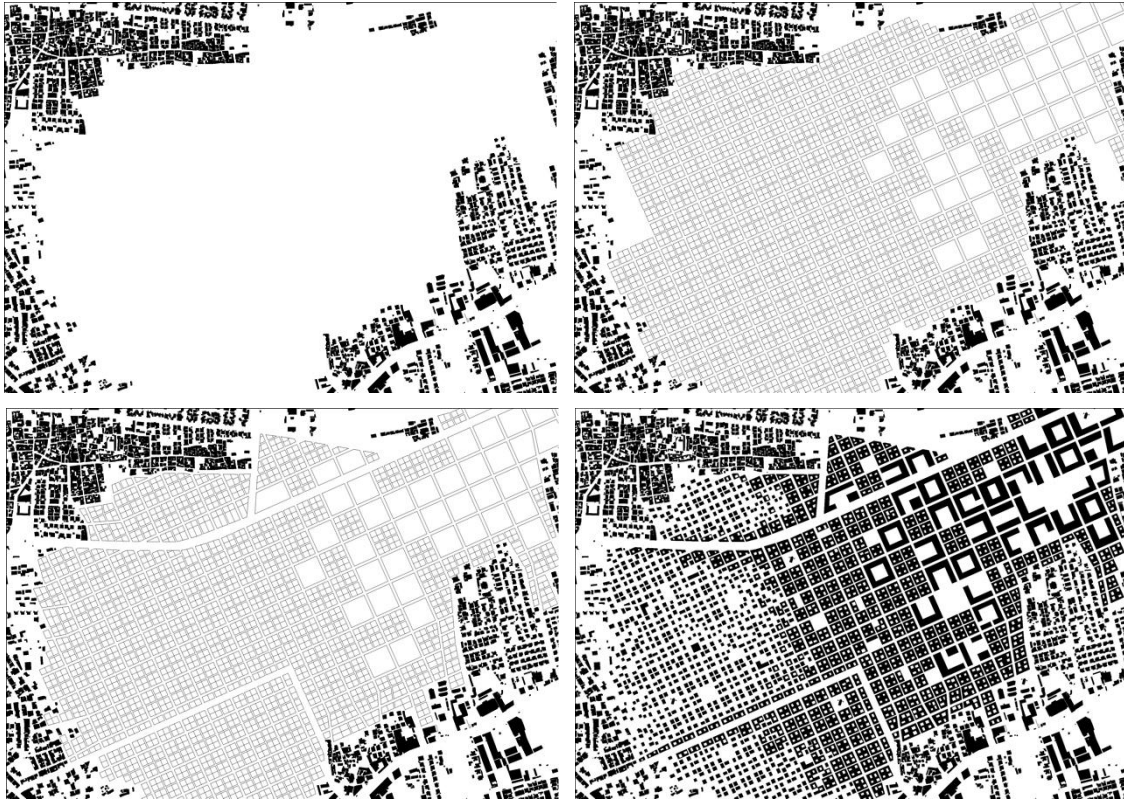


Fig. 2 — Application of morphological units in case study

3 CONCLUSION

In a globalized world it is essential to reflect on the safeguarding of regional and national identities and in the construction of a "Cultural Masterplan" this concern is directly with the need for a reassessment of how to plan and city.

The subdivision of the construction of the masterplan in three phases (case studies, sectoral strategies, and urban development plan) allowed us to act in accordance with the existing situation, and in a more informed way, that is, more integrated in the local context. Also in this sense, the creation of groups and the assignment of specific roles within specific areas, results in a multi-disciplinary study that can detect problems in joint sector and define strategies for action that otherwise would not be addressed, therefore reaching, a greater

understanding of the relationship of the existing sectoral policies with Architecture and Urban Planning.

The study of the Middle East, concluded that Bahrain has a context of great change at the regional level, which is led by the emirate of Dubai, with whom it is not possible to compete at the moment. At the country level, the Bahrain shows a clear trend toward the globalization of its cities for the past decades, that has resulted in a dispersed urban development and ill-suited architectural solutions.

The theoretical reflections on models of traditional cities in Islamic countries, such as the specific paradigms existing in Bahrain to conclude that the Compact City model is not only applicable in those countries, as it is in fact the model shows better results in terms of adequacy of the urban climate and environment that enables the city.

The analysis and evaluation of the different morphologies that comprise the built environment of Bahrain has proved to be an extremely useful tool for detecting the characteristics of the existing city that are best suited to addressing the identified problem. Thus, we concluded that the best approach to building in town is to import knowledge from the historical cities, to new cities, instead of importing Western urban models that have proved to be inadequate for the country.

The use of a simplified parametric system applied to urban planning presented positive results regarding the implementation of a basis for the new pattern or for the redevelopment of existing city and that translates into a much needed order for the city. It also allowed to solve the problems that the morphological schools face in applying the features identified on morphological analysis, to the design of a new urban fabric. Through this method of planning it was possible to reconcile the traditions of the city with new theories and technologies available.

Finally, the paper examined the set of rules and regulations are the right ones and whether the objectives have been achieved by the design of the city built. We also identified aspects that could be deemed to have been more developed in their implementation as well as some future developments that may lead to better implementation and monitoring of processes and solutions.