
Eman H Ayad

1Assistant Professor, Architecture Department, Cairo Higher Institute for Engineering, Computer Science and Management. – email: emanayad79@gmail.com

Abstract- Morphologies, patterns of urban form, are outcomes of myriad decisions taken by planners, urban designers, architects, engineers, politicians and others, addressing existing problems. Many city strategies and programs focus on specific urban issues in which local improvements, designs are considered, where as a broad context vision stays unknown. The insufficiency is in taking responsibility of the whole city shape, since development is limited to a group of land uses and road networks. Instead, looking at the coherent structure originating from significant patterns and unique relations forming the existing urban product must be considered. This paper tackles heritage contexts being sites with distinct complex conditions, these sites have been evolved over several generations with accumulative social, cultural and political transformations. Moreover, they present the city history, the community’s heritage asset that must be preserved, maintained and at the same time invested. The paper presents one of the most significant ancient cities which is the old city of Fes, Fes El-Bali, in Morocco, as a world heritage site. Fes is considered a model for an urban Islamic complicated fabric that recently undergoes careful restorations for revival. The paper introduces a morphological approach in order to achieve an integrated framework through the study of the sacred heart of the old city of Fes. The proposed framework offers the track for achieving efficiency and value for integrated developments.

Keywords- Urban Morphology, Urban Form, Morphological approach, Heritage contexts, Fes city, Fes el Bali.

I. INTRODUCTION

Urban morphology study is primarily concerned with the structure and form of the urban product, which is a multi-layered cumulative study of elements that accumulate together forming one whole. Thus, a main characteristic of urban morphology is its ability to be studied distinctly, to be divided into layers, different levels or patterns. The gradation of elements, for instance, street blocks/plot series/plot/building/cell unit, present accumulative layers not only for studying the differences, but also for interpreting their interrelations [1].

Cities’ urban structures are creations of various social, cultural, economic...etc. conditions and habits, in which these generic structures are powerful tools for city criticism. Moreover, urban morphology study gives guidance for future establishments. Thus, criticizing urban morphology definitely isn’t manageable unless studying or analyzing cultural aspects and habits, although vague in some cases [1].

Latest publications have defined urban morphology as the physical form interpretation of human settlements, in other words, it presents a study of the components of the urban fabric, their relations and transformations [2]. Most common researches on urban planning do not focus on the city’s physical character [3]. This study relies on urban morphology in being a main contribution for urban practice and upgrading. Considered as a distinct approach, urban morphology provides classified knowledge for specific places and sites, it facilitates the process for understanding, analyzing and accordingly achieving optimum visions and designs for development. A morphological approach permits comparisons between cities and predicts urban changes. Scheer, 2016, has presented urban morphology as a methodology for urban research, aiming to explore ways for explaining urban changes in various situations. A process that begins with gathering information, maps, surveys, documentaries for specific areas or sites. These accumulated data are sorted into three common categories; the built form that includes urban objects, buildings and infrastructure. Secondly, the boundaries of plots and public paths that represent defined lines and spaces, and the third category is the land presenting landscape including water elements, vegetation, topography...etc. Following categorization, begins stages of data analyses that depends comparing different patterns according to different inquiries. As a result of previous stages, changes are observed, determined to be recognized for new practices [4].

Morphological research enlightens other research, it paves the way for different approaches in specific contexts, exploring relations between urban form and relevant attributes [4]. Thus, this study assumes that a morphological approach is the best dealing with special and sensitive sites such as heritage ones.

II. URBAN MORPHOLOGY IN HERITAGE CONTEXTS.

Heritage contexts are sites with outstanding and exceptional global value from various historical, anthropological and aesthetic views [5]. These sites have witnessed distinct conditions and changes in their physical, social and economic structures, furthermore providing identity for people and their places. They embrace tangible and intangible values enhancing city and community welfare [6]. Programs for urban heritage conservation are recently oriented to contribute to city development goals for sustainability such as adaptive reuse, historical preservation, and several other trends. Thus, urban developers for heritage sites face major challenges dealing with such sensitive

Doi: 10.21608/ERJENG.2023.323550
settings. It is the issue of balance between development and conservation to achieve quality of life. This paper is concerned with heritage contexts, either being neglected, under development stages, or being part of a city’s revival. All are subjected to be studied under special and specific methodologies. The study proposes a morphological approach for dealing with such significant contexts. Urban morphology provides basis of unique data that links the historical urban product with all social, cultural, political and environmental transformations and conditions, which strengthens the city and guarantees its continuity and resilience.

### III. FACTORS OF URBAN MORPHOLOGY

A morphological approach goes beyond a superficial study of urban grains and elements, it explores the complexity and heterogeneity of the city at different scales according to the wide range of social, cultural human conditions. This part of study presents the proposed key factors for an urban morphological approach, which are set to be applied further on one of the most significant heritage contexts. Factors are shown as follows:

- **City Built Form**: This presents the city topologies at different scales, first at the overall city scale, then groups of areas or neighborhoods, gradually reaching to the one building shape and type. This includes not only buildings, also street patterns and topographies are considered.

- **Main Urban Elements**: Where the main urban components forming the city shape are identified, elaborated and their relations with city shape are specified.

- **City Forces**: In this level, forces shaping the city are explored. These forces are meant to be the pressure leading to certain shape. This pressure comes from cultural, social, economic... etc. basis of the specific community, such as traditions, beliefs, daily habits, activities... etc.

- **Development & Evolution**: This level of study shows how did the city develop over time to reach its current state, it also assumes how will it grow and extend in the future.

The study undergoes an analytical method to apply the urban morphological approach on a selected historical site. A case study acting as a model for other historical cities. The study depends on the proposed factors of morphological approach as an optimum method for dealing with such sites aiming to create a framework to be followed for further developments for similar projects.

### IV. MORPHOLOGICAL APPROACH CASE STUDY: THE OLD CITY OF FES, MOROCCO

#### 4.1 The Old City of Fes, ‘Fes el Bali’

Also known as the “Walled City of Fes”, is one the oldest cities of Morocco, considered the cultural and intellectual heart of Morocco. Fes city encompasses two main districts: the Medina and the Ville Nouvelle.

#### 4.2 ‘Fes el Bali’ Urban Morphology

- **At the City Level**...Fes city was first built on the banks of Fes River, Muslims expelling from south Spain ‘Andalusia’ and others from Tunis ‘Kairouan’ settled on the two sides of the river forming two quarters separated by the river, one known as “El-Qarawiyine” on the west side of the river and the other “Al-Andalous” on the east. Each settlement brought its own knowledge and culture to build up the city, while more and more immigrants came to expand this existence.
At the end of the 11th century, Fes was conquered by the Moravids who wanted to unify the city by building the city wall and gates which are considered one of the most significant urban features of Morocco. Fes then went through several rulers that developed the city turning it to be one of the vital commercial centers being at the crossroad of the most important trade routes of the Mediterranean [8]. At that time, Fes’s urban fabric reached its height by its monuments and important outstanding architecture and remained Morocco’s cultural and spiritual center. Following this period, began the French Protectorate from 1912 till 1956, when Fes lost a lot of its importance transferring the capital to Rabat city. The French built the new Ville Nouvelle outside the city where many rich families moved in to live in the new political and economic capital leaving a poor population in the old city. This had a negative effect on the urban form of the city, unsighted by the authorities, transformed to a neglected town with deteriorated infrastructure and hopeless community [8].

Today, the old city Fes el Bali faces severe challenges being an exceptional heritage site that needs preservation, at the same time needs rapid investment and development to upgrade social and economic conditions, to retain its importance as one of the world’s attractive destinations.

Houses formed clusters around semi-public, narrow, leftover alleys. Cohesive groups of clusters formed neighborhoods, groups of neighborhoods formed quarters, and quarters formed the city. An accumulative voluntary building process where each group appears as an extension of its unit and so on [9].

*Street* are the spaces leftover after building houses. They are either public, private or cul de sacs. They are very narrow, winding and are only made for pedestrians. This greatly minimizes travelling distances to primary social activities of work and leisure, which makes it unnecessary for cars to exist. Mixed-use results in a lively vibrant city, functionalizing constantly and with high levels of social interaction.

**Figure 3. Al-Qarawiyine University**

**Figure 4. City Streets**

- **City Topologies...** Old Fes, a pedestrian town with very intimate small buildings and narrow pathways. *Buildings* are not defined by its external geometric features but its topological properties directed with emphasis towards the interior. A modular element unifies all the urban fabric presented in the “Small-scaled Courtyard building”. Spaces expressed the community’s social values based on privacy and gender.

**Figure 5. Small courtyards, Fes el Bali**

**Figure 6. Narrow, multi-leveled city streets**

**Topography:** A main characteristic of the city is its natural strong contour, having strong impact on shaping buildings and pathways. Buildings are multi leveled supporting the social values of privacy.

### 4.2.2 Main Urban Elements

- **Traditional Buildings Typologies...** Stefano Bianca, a Swiss urban historian fond of Islamic architecture, stated that all urban elements of Fes el Bali depend on the prime concept of enclosure, a pattern that contributes to an integrated whole. Each individual element or building merges into the highly compacted urban fabric without losing its autonomy. Bianca acknowledged the town as a cellular system with all its components serving to create various degrees and levels of required privacy [9].

Fes el Bali gained its cultural and spiritual importance from its various traditional building typologies including gateways ‘Bab”, mosques, schools “Madrasa”, fountains “Sabil”, hospitality buildings “Foundouk”, houses “Dar”, markets “Souk”. Each typology has its unique traditional design prototype, some are more famous than others such as “Bab Boujeloud” with its fascinating blue and green mosaics that goes back to1913 [10]. Also, the “Qarawiyine Mosque” on the west side of the river, and the “Andalusia Mosque” on the east.
Figure 7. Foundouk prototype

Figure 8. Prototypes for Small & large houses

- **Outdoor Squares/Plazas “Sahat”** … are irregular in shape since they depend on building orientation in their shapes. One of the most famous squares or places is “Lalla Yeddouna” which acts as the central heart of Fes el Bali because of its location near a bridge connecting the two sides of the city: Al-Qarawiine & Al-Andalous. Other squares such as “Seffarine” square are famous for being the place where traditional artisan exist.

- **Fes River & Bridges**… “Bin Lamadoun” bridge is one of the most important bridges out of six built in the 11th century to facilitate the linkage between the Andalusian and Qarawiine. On the other hand, Fes River, which the city was once built on it, is today heavily polluted. Today, there are ongoing projects aiming to rehabilitate the river in terms of quality of water and public space adjacent.

- **Tanneries**… Leather production presents one of the main economic sources for the community and the most famous tourist attractions. Tanneries are built on rooftops of houses where raw skins are treated forming an unusual structure with magnificent dye colors.

4.2.3 City Forces

- **Social Forces**: Community Traditions and Islamic property law, over time, are considered primarily responsible for creating this unique urban form. Privacy and community are the guiding principles. These form social forces with great impact on the city at different scales.

  At the Building Level: Courtyards are considered a main design element, they may differ in size and furniture, but are basis of any building form. Heights were limited so that no one may overlook a neighbor's rooftop. Doors and windows must not be directly opposite each other on a street, to avoid any possibility to glimpse inside.

  Front doors of houses lead to lateral corridors to avoid any direct visual connection to the inner courtyard, so that vision would be met with a blank wall. Small, high, latticed or barred windows are designed to view the street and remain invisible from the outside. Street facades are high walls with a door and hardly any ornaments and very few narrow openings if necessary. In contrast, the inside is rich and pleasurable.

  At the Building Cluster Level: where several courtyard houses are grouped along a narrow cul-de-sac, usually occupied by an extended family [11]. Door entrances must deviate 1 meter at least from the opposite door of the neighbor. No windows should open to the street.

  At the Quarter Level: This third level is the sum of the cul-de-sacs and secondary streets branching off a main artery. where public buildings as mosque, madrasa, souk…etc. exist with gathering community spaces.

  At the City Level: Although looks unorganized, the city actually depends on a privacy architectural order. This order intelligently separates public and private domains. Curved streets, angles, cul de sacs and topography form irregular patterns reinforcing privacy and avoiding extended perspectives.
Figure 11. City organization, Fes el Bali

- **Cultural Forces:** Fes el Bali has always been Morocco’s cultural and intellectual center for its strong impressive artisan tradition. Artisans’ shops are found nearly in all squares and places, and their products spread all over the city, specifically in market places ‘souks’ and hotels ‘foundouks’. This had great effect on city’s urban character where all streets and squares are places for visitors and tourists besides inhabitants. On the other hand, the old city features several cultural traditional events and festivals, it includes museums, art galleries and small schools and traditional crafts workshops [8].

- **Economic Forces:** Leather production is considered the main economic source in Fes. It is fascinating to see how a noxious activity is today a major point of attraction. The unusual structure of the place, the spectacular colors of liquids and the singularity of the activity contribute to make a visit to the tanneries a unique one, despite of the smell. The tanneries are still considered the most important sources of income and trade for the city.

Figure 12. The Chouara Tannery is the largest in Fez. A vast urban whole filled up with vats.

- **Environmental Forces:** One of the main forces that has much defined the character and the shape of Fes city is the adaptation of the built form and morphology of the city to natural and environmental status of the weather and topography. Many urban design elements were adopted to cope with hot weather conditions dominating the environment. The city wall, which was mainly to provide defense in case of military attack, protected the inhabitants against the sand-laden desert winds. The whole city urban fabric presents informally shaped built masses where buildings interpenetrate like organic cells creating a dense, porous tight fabric. Streets are very narrow to prevent the walls of the houses from overheating during the summer.

Open Courtyards around which the rooms are organized, are usually planted for shade with a central water source to provide humidity. Courtyards present a pleasant environment to socialize behind closed doors and high walls.

Figure 13. Inner courtyards.

- **Political Forces:** political influences on Fes El Bali emerged when the French colonization approached to move the city infrastructure to the west new Ville Nouvelle, and transferred the capital to Rabat. Investments were oriented towards the new city that meant neglect of the old city’s physical maintenance and thus leading to a consequent decline. Since then, pressures of poor population and lack of maintenance resulted in deteriorated living conditions and a strained urban stock. A political retrieval in 1981, when Fes was listed a World heritage site by the UNESCO, governmental and international attention to the old city, its monuments, cultural and social heritage…etc. began where these are several circuits for tourists with specific determined urban routes allowing tourists to visit key places and monuments easily [8]. Thus, tourism plays a vital role with an important effect on city form.

- **Environmental Forces:** One of the main forces that has much defined the character and the shape of Fes city is the adaptation of the built form and morphology of the city to natural and environmental status of the weather and topography. Many urban design elements were adopted to cope with hot weather conditions dominating the environment. The city wall, which was mainly to provide defense in case of military attack, protected the inhabitants against the sand-laden desert winds. The whole city urban fabric presents informally shaped built masses where buildings interpenetrate like organic cells creating a dense, porous tight fabric. Streets are very narrow to prevent the walls of the houses from overheating during the summer.

Open Courtyards around which the rooms are organized, are usually planted for shade with a central water source to provide humidity. Courtyards present a pleasant environment to socialize behind closed doors and high walls.

Figure 13. Inner courtyards.

- **Political Forces:** political influences on Fes El Bali emerged when the French colonization approached to move the city infrastructure to the west new Ville Nouvelle, and transferred the capital to Rabat. Investments were oriented towards the new city that meant neglect of the old city’s physical maintenance and thus leading to a consequent decline. Since then, pressures of poor population and lack of maintenance resulted in deteriorated living conditions and a strained urban stock. A political retrieval in 1981, when Fes was listed a World heritage site by the UNESCO, governmental and international attention to the old city, its monuments, cultural and social heritage…etc. began where
several parties in urban planning, finance, sustainable development and many others were interested [12].

4.2.4 Development and Evolution

Fes el Bali, with its physical environment, is considered an unaltered Islamic city, a rich site for researchers who are eager to explore the roots of its Islamic heritage and civilization. Since the Protectorate period, the term ‘conservation’ has been limited to mere preservation, urban settlements including historic buildings were considered as dead artifacts rather than living entities that require careful development and adaptation to present-day needs without losing their authenticity and historical value [13].

In 1989, the Moroccan government created ADER-Fès which presents the Agency for development and rehabilitation in Fez. Since the 1990’s, private international support of restorations worked on important projects such as “Fondouk Nejjarine” and others. International conferences held by the UNESCO in Fes brought many plans of conservation and rehabilitation supported by the World Bank. Programs firstly focused on monuments and historical settings until the ADER-Fes began to set the rehabilitation plan in 1995, a vision to revive Fes inhabitants improving social and economic conditions, provide guidance, materials and support for urban restoration. Local residents were willing to be part of rehabilitation [12]. Since then, the conservation vision changed to invest in people playing the main role for development. Developers stated that the Conservation Vision of the heritage of Fez is an attempt to awaken the active history of the city, which encompasses all the positive intangible and tangible synergies, in order to catalyze its sustainability, in which its inhabitant is the vital player [14].

Conservation was based on evolving economical strategies to revitalize the city and its sustainability. Two major Development programs are being followed, which are [8]:

- The Regional Development Program for Tourism (PDRT) has the ambitious goal to turn Fes into a city break destination for national and international visitors, providing unique and authentic locations for cultural and spiritual activities and events.
- The Regional Development Program for Handicrafts (PDRA) that aspires to trade high quality artisan products on an international level, introducing a brand in coherence with the characteristics of Fez market. The area is planned to become a strong catalyst for artisan development, empowered with spaces for artisan production, educational programs, shops, restaurants, cafés, residences & other services.

Sustainability Goals

As development plans were oriented to improve and enhance social, economic and environmental conditions, programs were set and supported within the framework of sustainable development goals. These goals included ending poverty in all forms, ensuring equitable education and long-life learning opportunities, promoting sustained, inclusive economic growth, and building resilient infrastructure. It also included making urban settlements inclusive, safe and resilient, promoting responsible consumption and production and strengthening the means of implementation and revitalizing the global partnership where local agencies collaborated together with the international community [12]. Development programs continued with various schedules supported by the World Bank till 2013. Since then, the Moroccan government continued other programs. The most recent 2018-2023 vision plan for city development is today central to strategies of Moroccan leaders in which citizens are drivers of economic and cultural growth [12].

4.3 Place “Lalla Yeddouna”; A Neighborhood in Fes El-Bali.

Place Lalla Yeddouna is an ancient strategic site of approx. 7,400 sqm at the nucleus of Fes elBali. This area, where the city settled on the river banks, was one of the key links between the two sides, Adouat al-Qarawiyine and Adouat al-Andalous. They are connected by the Bin-Lamdoun Bridge, which is one of Place Lalla Yeddouna’s important historic and architectural features. “Bin Lamdoun” is Arabic for “between two cities” [8].

Conservation was based on evolving economical strategies to revitalize the city and its sustainability. Two major Development programs are being followed, which are [8]:

- The Regional Development Program for Tourism (PDRT) has the ambitious goal to turn Fes into a city break destination for national and international visitors, providing unique and authentic locations for cultural and spiritual activities and events.
- The Regional Development Program for Handicrafts (PDRA) that aspires to trade high quality artisan products on an international level, introducing a brand in coherence with the characteristics of Fez market. The area is planned to become a strong catalyst for artisan development, empowered with spaces for artisan production, educational programs, shops, restaurants, cafés, residences & other services.

Sustainability Goals

As development plans were oriented to improve and enhance social, economic and environmental conditions, programs were set and supported within the framework of sustainable development goals. These goals included ending poverty in all forms, ensuring equitable education and long-life learning opportunities, promoting sustained, inclusive economic growth, and building resilient infrastructure. It also included making urban settlements inclusive, safe and resilient, promoting responsible consumption and production and strengthening the means of implementation and revitalizing the global partnership where local agencies collaborated together with the international community [12]. Development programs continued with various schedules supported by the World Bank till 2013. Since then, the Moroccan government continued other programs. The most recent 2018-2023 vision plan for city development is today central to strategies of Moroccan leaders in which citizens are drivers of economic and cultural growth [12].

4.3 Place “Lalla Yeddouna”; A Neighborhood in Fes El-Bali.

Place Lalla Yeddouna is an ancient strategic site of approx. 7,400 sqm at the nucleus of Fes elBali. This area, where the city settled on the river banks, was one of the key links between the two sides, Adouat al-Qarawiyine and Adouat al-Andalous. They are connected by the Bin-Lamdoun Bridge, which is one of Place Lalla Yeddouna’s important historic and architectural features. “Bin Lamdoun” is Arabic for “between two cities” [8].

Conservation was based on evolving economical strategies to revitalize the city and its sustainability. Two major Development programs are being followed, which are [8]:

- The Regional Development Program for Tourism (PDRT) has the ambitious goal to turn Fes into a city break destination for national and international visitors, providing unique and authentic locations for cultural and spiritual activities and events.
- The Regional Development Program for Handicrafts (PDRA) that aspires to trade high quality artisan products on an international level, introducing a brand in coherence with the characteristics of Fez market. The area is planned to become a strong catalyst for artisan development, empowered with spaces for artisan production, educational programs, shops, restaurants, cafés, residences & other services.

Sustainability Goals

As development plans were oriented to improve and enhance social, economic and environmental conditions, programs were set and supported within the framework of sustainable development goals. These goals included ending poverty in all forms, ensuring equitable education and long-life learning opportunities, promoting sustained, inclusive economic growth, and building resilient infrastructure. It also included making urban settlements inclusive, safe and resilient, promoting responsible consumption and production and strengthening the means of implementation and revitalizing the global partnership where local agencies collaborated together with the international community [12]. Development programs continued with various schedules supported by the World Bank till 2013. Since then, the Moroccan government continued other programs. The most recent 2018-2023 vision plan for city development is today central to strategies of Moroccan leaders in which citizens are drivers of economic and cultural growth [12].

4.3 Place “Lalla Yeddouna”; A Neighborhood in Fes El-Bali.

Place Lalla Yeddouna is an ancient strategic site of approx. 7,400 sqm at the nucleus of Fes elBali. This area, where the city settled on the river banks, was one of the key links between the two sides, Adouat al-Qarawiyine and Adouat al-Andalous. They are connected by the Bin-Lamdoun Bridge, which is one of Place Lalla Yeddouna’s important historic and architectural features. “Bin Lamdoun” is Arabic for “between two cities” [8].

Conservation was based on evolving economical strategies to revitalize the city and its sustainability. Two major Development programs are being followed, which are [8]:

- The Regional Development Program for Tourism (PDRT) has the ambitious goal to turn Fes into a city break destination for national and international visitors, providing unique and authentic locations for cultural and spiritual activities and events.
- The Regional Development Program for Handicrafts (PDRA) that aspires to trade high quality artisan products on an international level, introducing a brand in coherence with the characteristics of Fez market. The area is planned to become a strong catalyst for artisan development, empowered with spaces for artisan production, educational programs, shops, restaurants, cafés, residences & other services.

Sustainability Goals

As development plans were oriented to improve and enhance social, economic and environmental conditions, programs were set and supported within the framework of sustainable development goals. These goals included ending poverty in all forms, ensuring equitable education and long-life learning opportunities, promoting sustained, inclusive economic growth, and building resilient infrastructure. It also included making urban settlements inclusive, safe and resilient, promoting responsible consumption and production and strengthening the means of implementation and revitalizing the global partnership where local agencies collaborated together with the international community [12]. Development programs continued with various schedules supported by the World Bank till 2013. Since then, the Moroccan government continued other programs. The most recent 2018-2023 vision plan for city development is today central to strategies of Moroccan leaders in which citizens are drivers of economic and cultural growth [12].

4.3 Place “Lalla Yeddouna”; A Neighborhood in Fes El-Bali.

Place Lalla Yeddouna is an ancient strategic site of approx. 7,400 sqm at the nucleus of Fes elBali. This area, where the city settled on the river banks, was one of the key links between the two sides, Adouat al-Qarawiyine and Adouat al-Andalous. They are connected by the Bin-Lamdoun Bridge, which is one of Place Lalla Yeddouna’s important historic and architectural features. “Bin Lamdoun” is Arabic for “between two cities” [8].

Conservation was based on evolving economical strategies to revitalize the city and its sustainability. Two major Development programs are being followed, which are [8]:

- The Regional Development Program for Tourism (PDRT) has the ambitious goal to turn Fes into a city break destination for national and international visitors, providing unique and authentic locations for cultural and spiritual activities and events.
- The Regional Development Program for Handicrafts (PDRA) that aspires to trade high quality artisan products on an international level, introducing a brand in coherence with the characteristics of Fez market. The area is planned to become a strong catalyst for artisan development, empowered with spaces for artisan production, educational programs, shops, restaurants, cafés, residences & other services.

Sustainability Goals

As development plans were oriented to improve and enhance social, economic and environmental conditions, programs were set and supported within the framework of sustainable development goals. These goals included ending poverty in all forms, ensuring equitable education and long-life learning opportunities, promoting sustained, inclusive economic growth, and building resilient infrastructure. It also included making urban settlements inclusive, safe and resilient, promoting responsible consumption and production and strengthening the means of implementation and revitalizing the global partnership where local agencies collaborated together with the international community [12]. Development programs continued with various schedules supported by the World Bank till 2013. Since then, the Moroccan government continued other programs. The most recent 2018-2023 vision plan for city development is today central to strategies of Moroccan leaders in which citizens are drivers of economic and cultural growth [12].
States of America. The Competition had the vision of “Respecting Heritage and Celebrating the Future”.

The program aimed to reduce poverty through economic growth by increasing productivity and improving employment in high potential sectors. The competition task comprises the urban design for the square ‘Place Lalla Yeddouna’, the preservation of historic buildings as well as the design of new buildings. The site is expected to be a cultural site exemplary of our time and the region, and a stimulator for the development of other projects in Fez, its region and Morocco. It is known as a center for traditional handicrafts, mainly tanners, copper- and brass-blacksmiths. The Square was also a venue for holding various cultural “Festivities” that date back to the early 17th century. Thus, the aim of development is to foster the connection of artisan craftwork, tourism and cultural heritage and to create a showcase for the Medina’s artisan craftwork, a center of commerce and a place to relax & enjoy open spaces and the river in a non-polluted, safe and pleasant environment.

Mossessian & partners, London/UK in collaboration with Yassir Khalil Studio, Morocco, has won the competition by a proposal aiming to create Place Lalla Yeddouna as a vibrant mixed-use urban hub for the community and visitors. The winning strategy was to re-connect Place Lalla Yeddouna to the riverfront and create a pedestrian route across the river and through the Medina.

The Competition Jury classified this project under the category “traditional footprint”, the jury appreciated the way the project tries to continue the spatial and atmospheric qualities of the Medina into a new three-dimensional composition.

The authors created an accessible sculpture that continues existing patterns and offers an additional network of paths and passages. The indirect connections between the city (and in particular the Place Lalla Yeddouna) and the riverbanks are an extra value added to the actual urban situation. As the project opens itself to the river it succeeds to integrate the riverbanks into the traditional street network of the Medina. At the same time simple cuts introduced in the buildings with color-lined gateways were considered a powerful instrument to introduce contemporary spaces into the scheme.

The project maintained and protected the original shape for the square and surrounding alleys, restored footprints, land co-efficient and height of historical buildings with limited variations. Small courtyards are the main key element for new building designs creating a similar extended morphological pattern with homogenous volumes and forms. According to competition regulations, certain functions and uses are prohibited, and others that meet the project’s aim are permitted. Exterior facades respected the community’s social and environmental conditions in proportions, openings, heights and materials. Even facades confronting the river was
not an exception for opening the view, on the contrary, all river-adjacent designs respected the concept for orientation towards the inner courtyard space.

V. URBAN MORPHOLOGICAL FRAMEWORK FOR HERITAGE CONTEXTS

For heritage sites, urban development tackles multiple complicated issues to attain sustainability goals. Thus, a morphological framework is proposed from the previous proposed factors and its application on the selected case study. This framework presents an approach to be followed when dealing with special contexts such as heritage sites.

The framework depends on the exploration of the main morphological factors to be fragmented into more clear elements according to the previous classification; the city-built form, main urban elements, city forces, and development/evolution. Each were studied and analyzed through the presented case study to reflect patterns of relations. This classification varies according to the city morphological levels or scales, whether the inquiry is at a city level or at the scale of a group of buildings. Levels begin from buildings to clusters, then zooms out to quarters and finally deals with the whole city. Thus, a matrix is formed depending horizontally on the proposed morphological factors, while vertically defines different elements concerning different city levels and scales. These intersect to produce various patterns and relations leading to numerous values.

An example is when focusing on geometries at building levels, various patterns of arrangements, orientations with other spaces, solid/void boundaries…etc. appear. These patterns of relations are elaborated to achieve specific value such as or unity, connectivity…etc. as shown in Fig. 20. In other words, according to the proposed framework, it could be said that a good city morphology is the one adapted to contemporary cultural, social, economic and environmental needs with all its relational patterns to achieve high city performance.

The aim of this framework is to drive the way to high city value through studying morphology. Values of design order, unity, accessibility, connectivity and degrees of intimacy, all are achieved through patterns of relations that define arrangements, hierarchy, boundaries…etc. that come out of the city form element study. Other values of visualization, perception, focal points, city identification are products of creating patterns of specially organized buildings and spaces together, creating anchor areas… etc., all through building typologies and focal elements. Many other essential values are presented through the framework, shown in Fig. 20, that when applied the other direction way back, achieves a good city morphology. Thus, the framework is considered an integrated quantitative approach, a studying tool, that opens ways for qualitative visions for special urban contexts.

VI. CONCLUSION

The old city of Fes, with its exceptional urban morphology, is the product of accumulative cultural, social and environmental conditions. To acquire its sustainability, Fes el Bali has expanded its conservation scope beyond being an iconic site, and aimed to go side by side with economic and social developments. It depended on inhabitants being key players for sustaining its outstanding morphological existence.

In general, do we intend to shape our cities, or will we wait to see how do they shape us? Urban morphology approach offers an answer by explaining city forms and patterns of urban situations. Urban planners and designers can benefit from an urban morphological framework to strengthen cities, and build resilient contexts confronting continuous social, economic and environmental transformations. The outlined framework provides a deep interpretation for community interrelations and offers a basis for future place/community centered designs for heritage contexts. Heritage contexts are challenging sites as they enclose value that worth protection.
and development, at the same time, could be mishandled by restraining future within their realm [13]. Dealing with such contexts must go beyond being historical sculptures, but a widened scope of development must be tackled through its morphological values.

Funding: No funding.

Conflicts of Interest: No conflicts of interest.

REFERENCES