AMERICAN UNIVERSITY OF BEIRUT

RE-CONCEPTUALIZING INFRASTRUCTURAL BREAKS: BEIRUT'S INNER CITY RING ROAD AS CULTURAL INFRASTRUCTURE

By

ZARIFI AMIN HASSAN HAIDAR

A thesis
submitted in partial fulfillment of the requirements
for the degree of Master in Urban Design
to the Department of Architecture and Design
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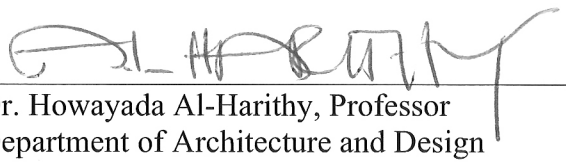

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AN ABSTRACT OF THE THESIS OF

Zarifi Haidar for Master of Urban Design
Major: Urban Design

Title: Re-conceptualizing Infrastructural Breaks: Beirut's Inner City Ring Road as Cultural Infrastructure

The term "infrastructural breaks" stands for the irregular urban conditions resulting from the imposition of traffic arteries on inner cities fabrics. In the 1950s and 1960s, road-building schemes addressed the increasing need for facilitating accessibility in and out of inner cities without any instrumental engagement with ecological processes or with the socio-cultural needs of communities. The imposition of such traffic arteries disrupted the physical and social fabric of the neighborhoods they traversed. Taking the southern section of Beirut's inner city ring road as case study, this thesis attempts to explore how the Fouad Chehab highway can be re-conceptualized from an infrastructural break into an integrative cultural edge linking the BCD to its adjoining districts.

This thesis is a conceptual, design-centered investigation that aims at exceeding "customary frames of understanding" (Schwarzer, 2000) by bringing together theoretical, analytical, and design knowledge from different disciplines. Its topic pertains to the recent concern by "integrative urbanism" (Ellin, 2006) to repair the disruptive impact of modernist functional planning on city fabrics. And, by working along the intersection of the design disciplines of architecture, landscape architecture and urban design, the thesis critically explores the emerging fields of Architectural Urbanism and Landscape Urbanism to articulate specific design strategies that embrace the site's complexity and uniqueness.

CONTENTS

ILLUSTRATIONS

CHAPTER I

INTRODUCTION

The topic of this thesis emerged from my participation in the urban and landscape design studio entitled "Re-Envisioning Infrastructural Breaks: Urban and Landscape Design Strategies for the Southern Edge of Beirut's Central District" conducted during the 2012 Spring semester at the graduate program in Urban Design, the American University of Beirut (AUB). While the studio was aimed at adopting a visionary position and reaching creative design solutions, this thesis is a critical assessment of my design proposal, whereby this design is weighed in reference to relevant disciplinary literature, projects and case studies. Accordingly, this thesis is a conceptual, design-centered investigation that aims at exceeding "customary frames of understanding" (Schwarzer, 2000) by bringing together theoretical, analytical, and design knowledge from the fields of Architectural Urbanism and Landscape Urbanism.

In the context of the studio, the term "infrastructural breaks" stood for the irregular urban conditions resulting from the imposition of traffic arteries on inner cities fabrics. In the 1950s and 1960s, traffic arteries were considered a functional necessity for efficient transportation. Road-building schemes addressed the increasing need for facilitating accessibility in and out of inner cities and were supplemented by ring roads, bypasses and connections to national motorway systems without any instrumental engagement with ecological processes or with the social and cultural needs of communities. Being "massive in scale and reductive in scope," the imposition of such traffic arteries disrupted the physical and social fabric of the neighborhoods they traverse (Tatom, 2006). They became catalysts of urban change by cutting the spatial

continuity between adjoining districts, changing the confines and structure of neighborhoods, creating residual spaces, and truncated parcels and blocks. At the same time, they brought forward 'dialectics of integration, segregation and transition both along their edges and within their adjacent districts and fostered opportunities for re-envisioning infrastructure and infrastructural edges through urban and architectural reinterpretations of open spaces, building typologies and ecological landscape interventions' (Studio Report, 2012).

Figure 1: The concept of infrastructural breaks illustrated through sections of Beirut's 1964 cadastral map which highlight the impact on the urban fabric caused by the construction of urban highways (Source: Stopthehighway.wordpress.com).

A. Problematic Context

This thesis addresses the infrastructural break created by the Fouad Chehab highway, a through-traffic artery demarcating the southern edge of Beirut's Central District (BCD). This highway was part of the 1963 Beirut master plan created by the French urbanist Michel Écochard whose aim was to decongest inner-city traffic (Saliba & Al-Tayeb, 2014). By cutting across the continuous urban fabric that formed the first extension of the medieval town, this inner-city highway created:

- **Two adjacent districts that are physically and socially segregated** and 'which are undergoing two different processes of development. On the northern side, the BCD has evolved into a state-of-the-art postwar reconstruction district entrusted by

the government to Solidere, a private real estate company operating as a public-private joint venture. On the southern side, the traditional inner city neighborhoods of Bashoura and Zokak al Blat, are governed by an outdated blanket zoning (established in August 31, 1954), and are being subjected to a market-led ad hoc development that is redefining their economic structure and social fabric' (Studio Report, 2012).

- **A highway interface zone that is in a state of stagnation and transition**

lacking therefore a clear architectural and urban identity. While on the BCD side, this interface is emerging as a cultural hub by its hosting Dar Beirut, a major cultural center that will visually link the city center to the highway, on the Bashoura and Zokak Al Blat residential side, the interface demarcates a deteriorating edge with abandoned lots and decaying traditional structures waiting to be redeveloped into a high rise frontage with strategic views over the city center.

Figure 2: The Fouad Chehab highway within the urban fabric of Beirut (Source: Urban and Landscape Design Studio).

Figure 3: Bird-eye view of the Fouad Chehab Highway taken from Saifi (Source: Urban and Landscape Design Studio).

B. Research Question and Objectives

The aim of this thesis is to explore alternative design strategies, inspired from the emerging fields of Architectural Urbanism and Landscape Urbanism, to redefine inner city transport corridors as connective linear spaces with an innovative urban identity. Taking the southern section of Beirut's inner city ring road as case study, the thesis attempts to answer the following question:

How can the Fouad Chehab highway be re-conceptualized from an infrastructural break into an integrative cultural edge linking the BCD to the adjoining districts?

The premise of the thesis is that the various (projected and existing) cultural and open spaces along the Fouad Chehab highway provide an opportunity for its integration into the city fabric through its transformation into a cultural artifact that captures the synergy of the different significant buildings and spaces currently dispersed around it. Accordingly, the thesis is an attempt to transform the non-place of the highway into a hybrid structure dedicated to culture, "a place" that is connected to the wider city network of cultural and open spaces. As such it will explore design possibilities for (a) connecting existing, projected and new cultural and open spaces found at both sides of the highway into a network of cultural spaces to promote social activity and interaction, (b) strengthening the physical and visual connectivity between both sides of the highway, (c) recycling derelict non-places and transforming them into dynamic spaces.

C. Research Significance

The topic of this thesis pertains to the recent concern by 'integrative urbanism' (Ellin, 2006) to repair the disruptive impact of modernist functional planning on city fabrics by redefining transport corridors as a constitutive part of the socio-cultural fabric and the urban landscape and ecology. By working along the intersection of the design disciplines of architecture, landscape architecture and urban design, the thesis is a critical explorations of the emerging fields of Architectural Urbanism and Landscape Urbanism to articulate specific design strategies that embrace the site's complexity and uniqueness. As such the thesis contribution resides in the merging and testing of up-to-date design concepts and methodologies on a specific context pointing out to new research-by-design directions.

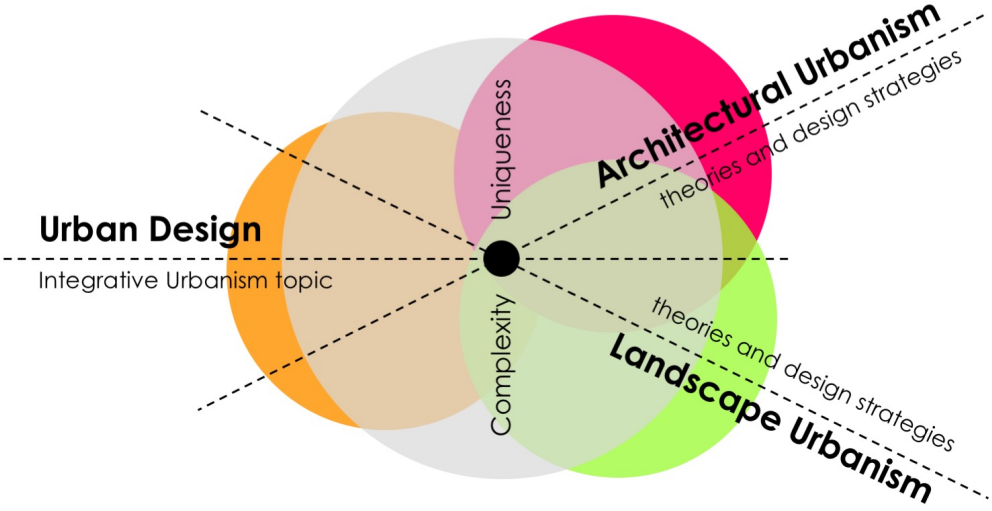

Figure 4: Research significance

D. Structure and Method: From Studio to Thesis

The thesis revolves around three complementary parts (Fig.5):

The first part provides a detailed report of the urban and landscape design studio which culminated in a design proposal focused on the five generic urban design issues of identity, infrastructure, ecology, public space and private development (Saliba, 2015). These issues were articulated around the theme of 're-conceptualizing infrastructural breaks into cultural infrastructure'. The process and findings of the design studio are explained in the coming chapter.

The second part takes a critical distance from the design studio outcome and expands on the theoretical as well as the methodological frameworks deduced from the fields of Architectural Urbanism and Landscape Urbanism. The literature review further investigates different case studies pertaining to the two disciplines and extracts key design principles and recommendations of relevance to the thesis topic. In contrast to

the first part, the approach of the second part is deductive. Based on theoretical findings and a comparative assessment of the different case studies, various design concepts are highlighted to improve the initial design approach and proposal.

The third part constitutes a critical attempt at reflecting on the initial design proposal in light of the lessons and strategies learned from the theoretical and case studies investigation. The result is a revisited urban design proposal and its applicability in similar inner city contexts.

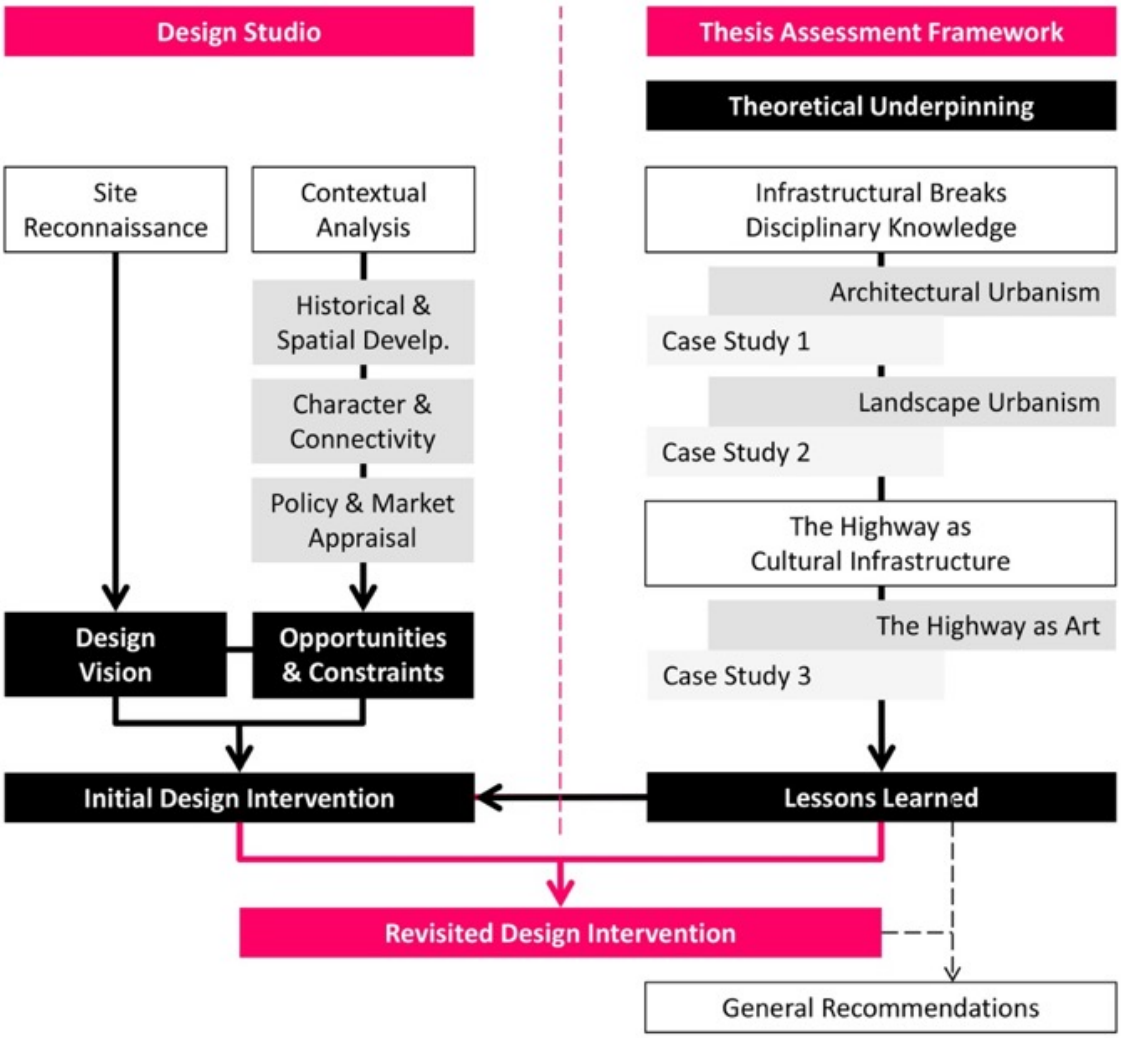

Figure 5: Thesis structure and methodology

CHAPTER II

URBAN AND LANDSCAPE DESIGN STUDIO

As previously stated, the aim of the urban and landscape design studio was to articulate the critical discourse about infrastructural breaks and edge developments within inner city contexts in general, and to come up with design solutions for the problematic condition created by the infrastructural break at the southern edge of Beirut's central district in specific. The following chapter presents the methodology and outcome of this studio and is divided into four sections. The first section revolved around the research that took place at the beginning of the studio and through which concepts, vision and case studies related to the issues of mobility, infrastructure and highway development were investigated. This section is not covered in the chapter; it has been merged with the literature review. Section A presents how the studio was jumpstarted with a preliminary reconnaissance study of the site, an initial perception of site constrains and opportunities that was followed by the articulation of different visionary ideas for the site's development. In order to reach a critical understanding of the dynamic of change affecting the study area, an in-depth analysis of the site was carried out; this context appraisal is developed in details in Section B. Finally, Section C presents the strategic master plan and design development initially proposed for the infrastructural break at the southern edge of Beirut's central district based on the opportunities and constraints defined in the previous section and in accordance to the initially formulated design vision.

A. Preliminary Site Reconnaissance and Design Vision

The design phase was initiated with a preliminary reconnaissance study of the site to articulate design visions for Fouad Chehab's infrastructural break development which expressed different perceptions of the site's constraints and opportunities. The purpose of this exercise was to jump start the studio through an initial reaction to the site that would serve as reference for later assessment.

The initial perception instigating the design consisted of two parallel readings of Fouad Chehab's infrastructural break: the highway as edge and field. The highway was perceived as an edge, a line between two contrasting entities: one governed by chaos (Bashoura) and other governed by order (Solidere). At the same time, the highway was perceived as a field of potentiality, a non-place waiting to be activated by people and activities.

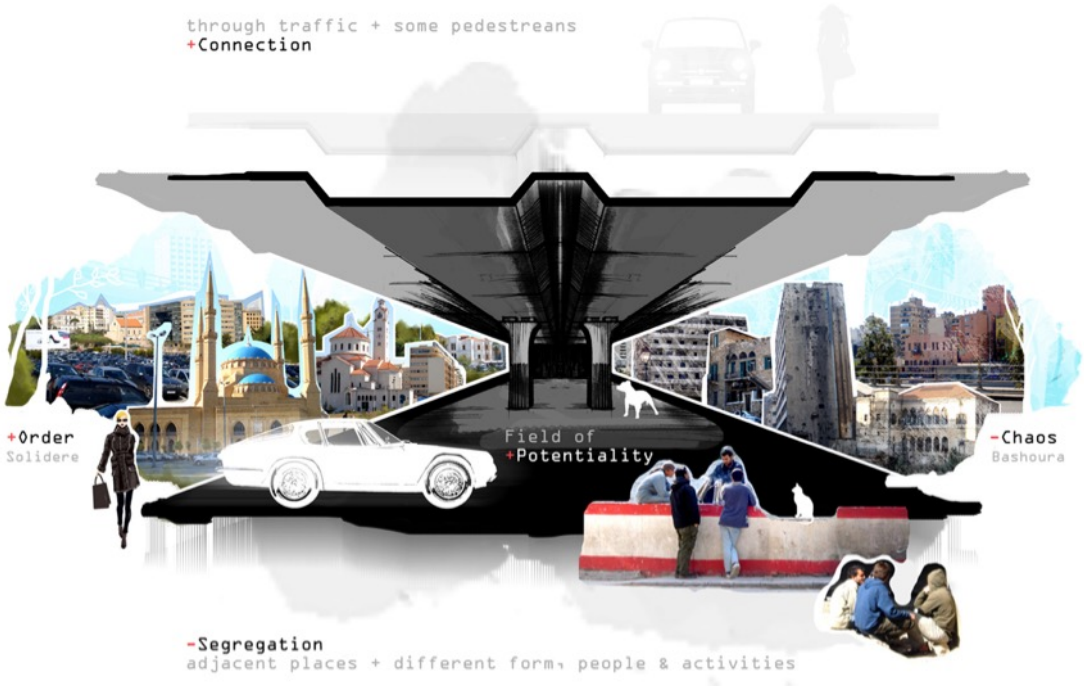

Figure 6: Initial reading of the site; the highway as edge and field.

In response to the perceived segregation and potentiality of the site, the infrastructural break of Fouad Chehab was envisioned as a catalyst for cultural flow; a structure which would transform the non-place of the highway into a dynamic place for the integration of opposites.

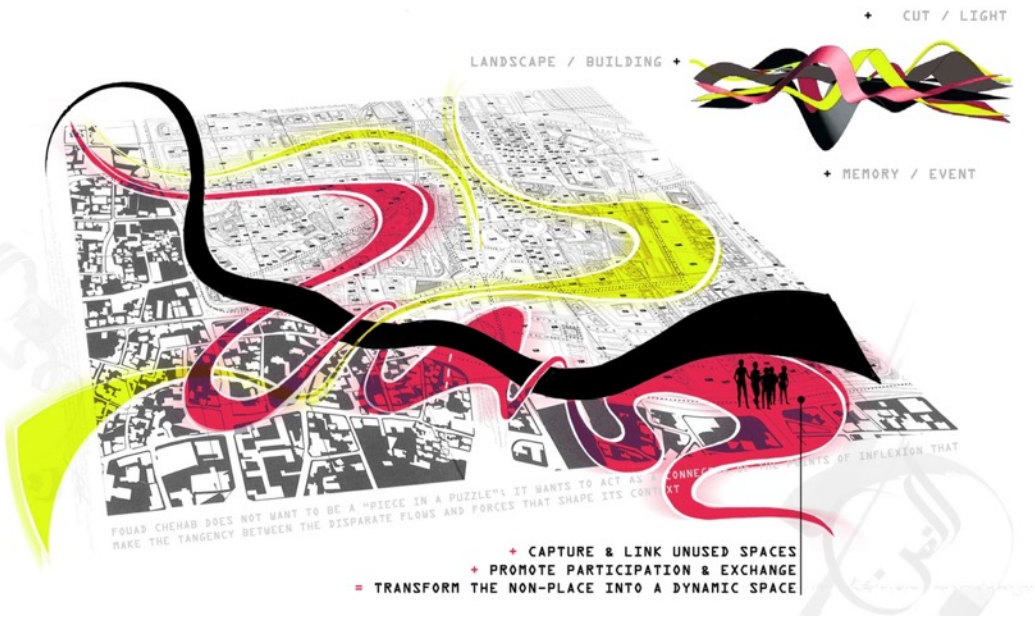

Figure 7: Design Vision: Fouad Chehab as a catalyst for cultural flow.

Starting with the definition of culture as a diverse and complex construct representing the richness and diversity of multifaceted contemporary society, its history and heritage, ways of life, and social activities and interaction (Council, 2011), the proposed structure was envisioned as part of a system made up of an interaction field and points of inflection. The interaction field was imagined as a structure that combines buildings and landscape (to provide physical continuity and connectivity) and which acts as a carrier of cultural flow by associating the different open and cultural spaces lying along and around the highway. The latter are the points of inflection, open and

cultural spaces to be activated to celebrate past memories (history and heritage) and contemporary events (to promote interaction).

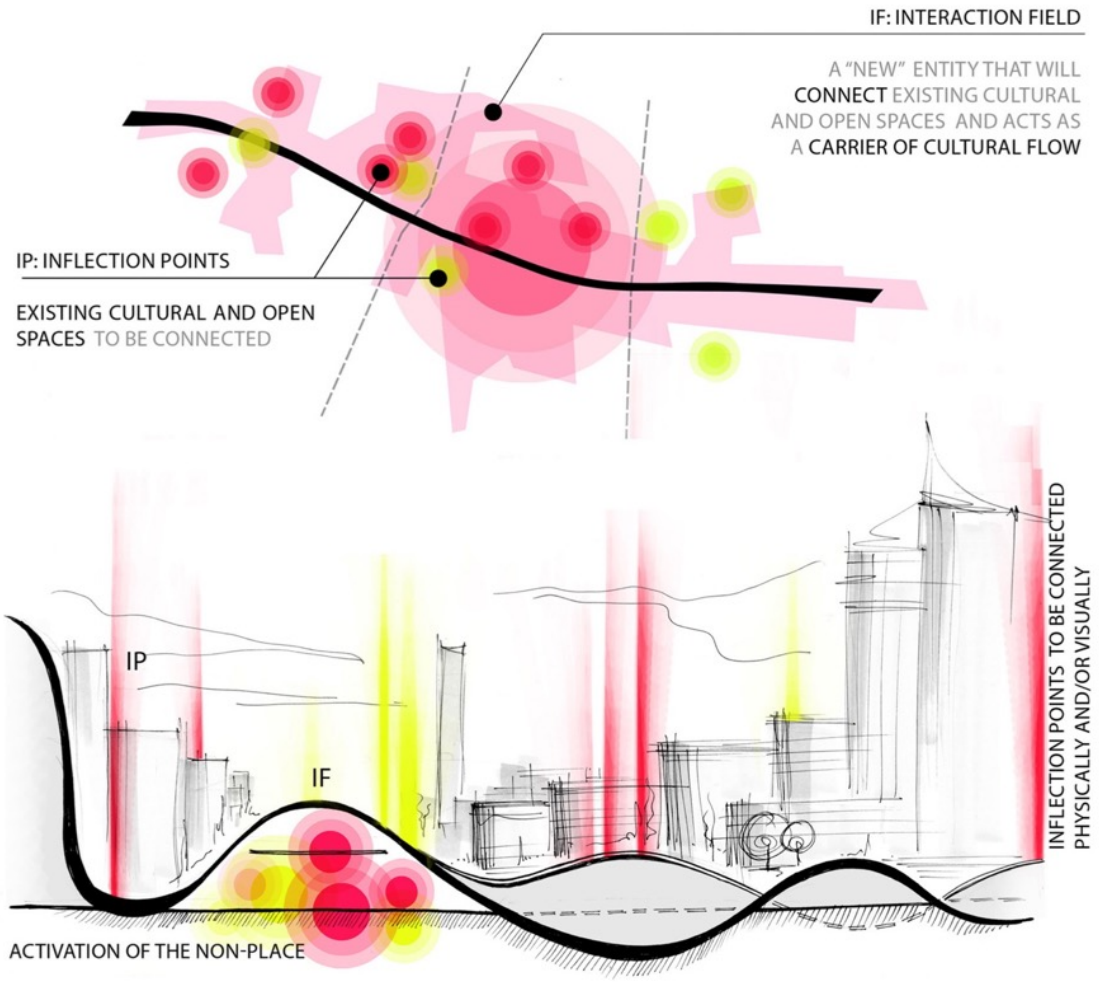

Figure 8: Design concept. The ring is envisioned as a connector (of existing cultural and open spaces) and as a carrier spine (the ring itself is injected with cultural venues and activities)

Figure 9: Design concept extended beyond the boundaries of the highway.

B. Contextualizing the infrastructural break

The context appraisal starts with the definition of the study area boundaries and a preliminary design problematic that sets the overall goals and objectives for the study. The aim of this phase is to reach a critical understanding of the dynamics of change affecting the study area and to define opportunities and constraints that provide the framework for the formulation of a master plan. Comparative investigations are conducted along three tracks: 1) historical and spatial development, 2) policy and market development, and 3) character and connectivity.

1. Historical Development

The study of the site's historical development entails covering key readings and the production of a chronological account relating the dynamics of growth of the city, the issues brought forward by physical urbanization and the resulting continuity and change of the urban fabric. After this study, we found out that the evolution of the infrastructural network of Beirut's Central District was marked by three successive stages of modernization: early modernization, high modernization and late modernization. This evolution is herein explained to show how the development and growth of the city center is linked to issues of mobility and congestion as well as to clarify how the partial implementation of successive master plans led to the current infrastructural configuration (Saliba & Al-Tayeb, 2014).

a. Early modernization:

Early modernization refers to the late 19th century, when the Ottoman and French colonial powers introduced, respectively, the "Tanzimat" and "Haussmannian ideals" aimed at ordering the urban structure according to a new taxonomy of roads and links. Unlike other cities in the region, in Beirut the Haussmannian layout was superimposed on the city's medieval fabric wiping out most of the traces of the pre-industrial walled town (Saliba & Al-Tayeb, 2014).

b. High modernization:

This stage resulted from the densification of peripheral quarters during the early independence period. Two master plans were proposed by Michel Écochard, in 1943 and 1963, in an attempt to decongest inner-city traffic and set the framework for

future suburban growth. Though these plans were not fully implemented, they introduced the Modernist's functionalist vision according to which mobility is a purely functional necessity. This modernization stage reached its climax in the year 1966 when the Fouad Chehab Avenue was completed, the Fakhreddine Street, located at the west of the BCD, widened, and the "George Haddad' street, located at the east of the BCD, approved. Accordingly, the Ecochard's master plans materialized as an integral part of Beirut's urban fabric (Saliba & Al-Tayeb, 2014).

c. Late modernization:

Late modernization starts with the end of the 15 years of civil war in the 1990's and with the Lebanese government's decision of reconstructing the war-torn BCD. The Fouad Chehab Highway, which had been extremely damaged during the civil war years, was envisioned as the connector of three main nodes: the airport, the sea port and BCD. It was doubled in width and two overpasses were added above major intersections. As a result, mobility with the periphery was improved; yet, the segregation between the city center and the Bashoura and Zokak El Blat districts was further accentuated. Moreover, the ring road was adopted to define the boundaries of the postwar redevelopment area clearly demarcating the city's center and peri-center, as well as two planning systems (Saliba & Al-Tayeb, 2014).

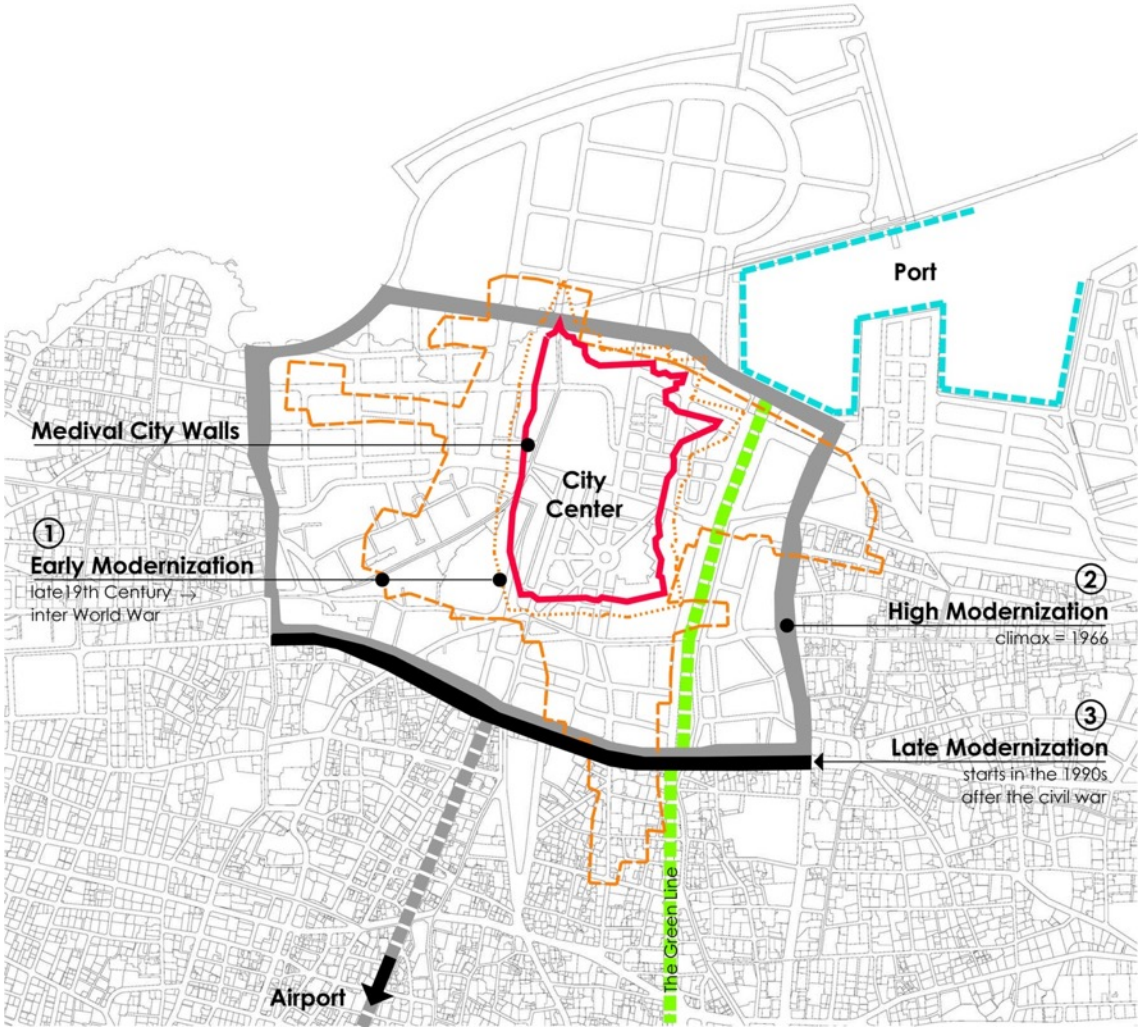

Figure 10: Historical development of the site and its main infrastructure.

Figure 11: Development of the infrastructural break caused by the imposition of the Fuad Chehab highway at the southern edge of Beirut City Center.

2. Policy and market development

This section summarizes a lengthy and thorough analysis of the stakeholders, legislative framework, and market dynamics underlying the current and future transformation of the site. This critical analysis of the area's policy and market development was aimed at: 1) assessing the area's susceptibility to change at lot, block and district levels and, 2) appraising its strengths, weaknesses, opportunities and constraints in the short, medium and long run.

- Legislative framework

With the adoption of the ring road as the city center's boundary, the site was divided into two different zones (center and pericenter) governed by two different regulatory systems. Outside the city center, development is guided by a pre-war blanket zoning established by the Directorate General of Urbanism (DGU) in August 31, 1954. This regulatory framework consists of ten concentric zones of diminishing floor to area ratio (FAR) from the city center outward. There are no detailed building guidelines and, as a result, development is simply determined by the footprint exploitation and total exploitation coefficients assigned to each of these 10 zones. In the city center side, Solidere, the real estate company responsible for the postwar reconstruction of the BCD, developed its own regulatory framework. All development in the BCD follows a detailed master, which integrates an urban conservation strategy and provides detailed guidelines on two levels, a general district level and a more detailed sector level. Thus, unlike the blanket zoning that governs development elsewhere in the city, Solidere's master plan not only controls building heights and FAR, but also defines the required

frontages, build-to-line controls, street-wall controls, required pedestrian links, opens spaces, etc.

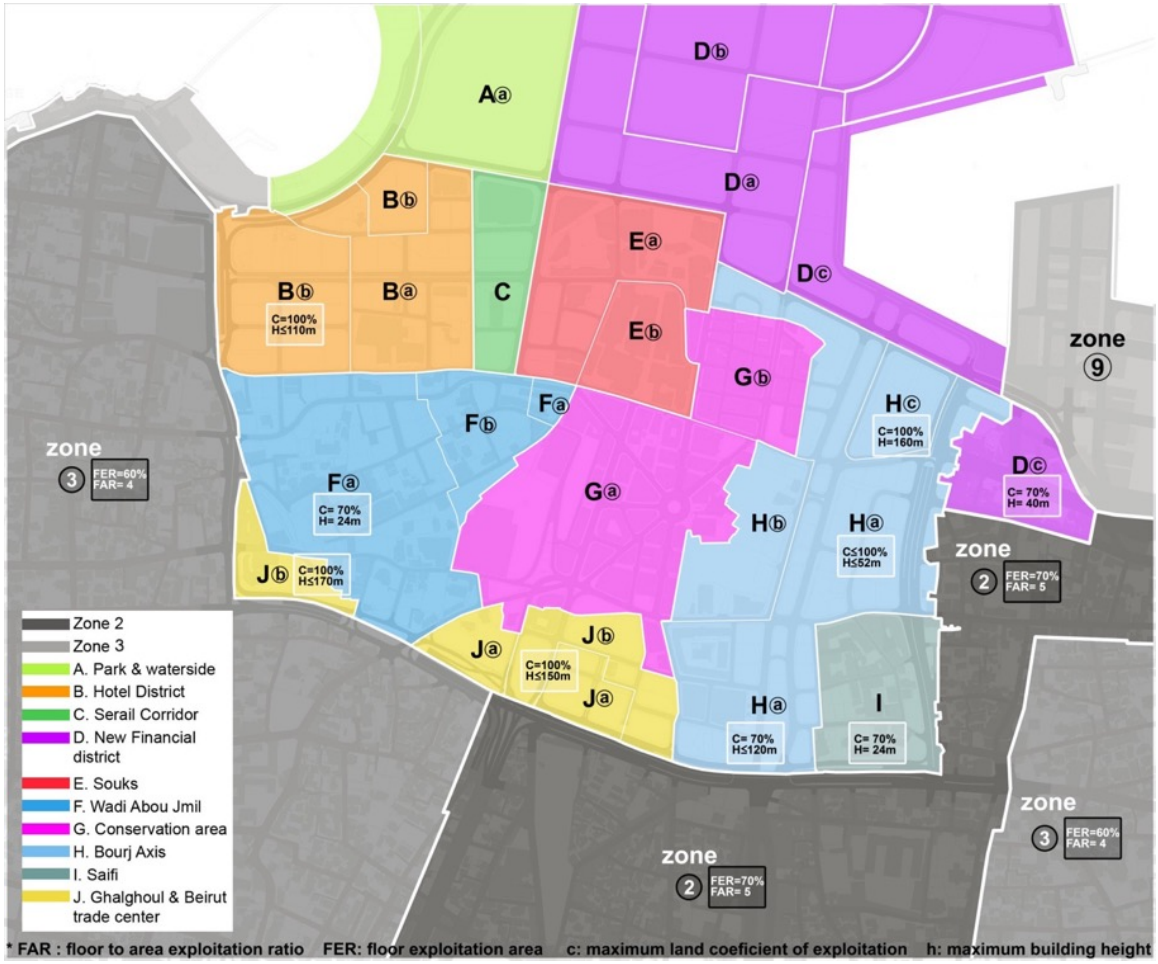

Figure 12: Map showing Solidere's redevelopment vs. blanket zoning boundaries at district level (Source: Baghdadi, 2012).

- Market dynamics:

BCD includes the most valuable real-estate in the city; where the cost of plots varies between 18,000 to 20,000 USD per square meter. Second in price come the plots located along the southern edge of Fouad Chehab, whose cost varies between 14,000 to 15,000 USD per square meter. The real estate speculation in this part of the city is very high because, due to the presence of the void of the highway and current building

regulations, the plots facing the highway can be developed as high-rise buildings. Since these plots can be subject to reparcelation and the only factors affecting building heights are setbacks and exploitation coefficients, reparcelized plots can be developed into high towers overviewing the well-planned city center and creating a “wall” against the rest of the city. Finally, as we move away from Solidere and the highway, the price of plots decreases to become 4,000 to 5,000 USD per square meter.

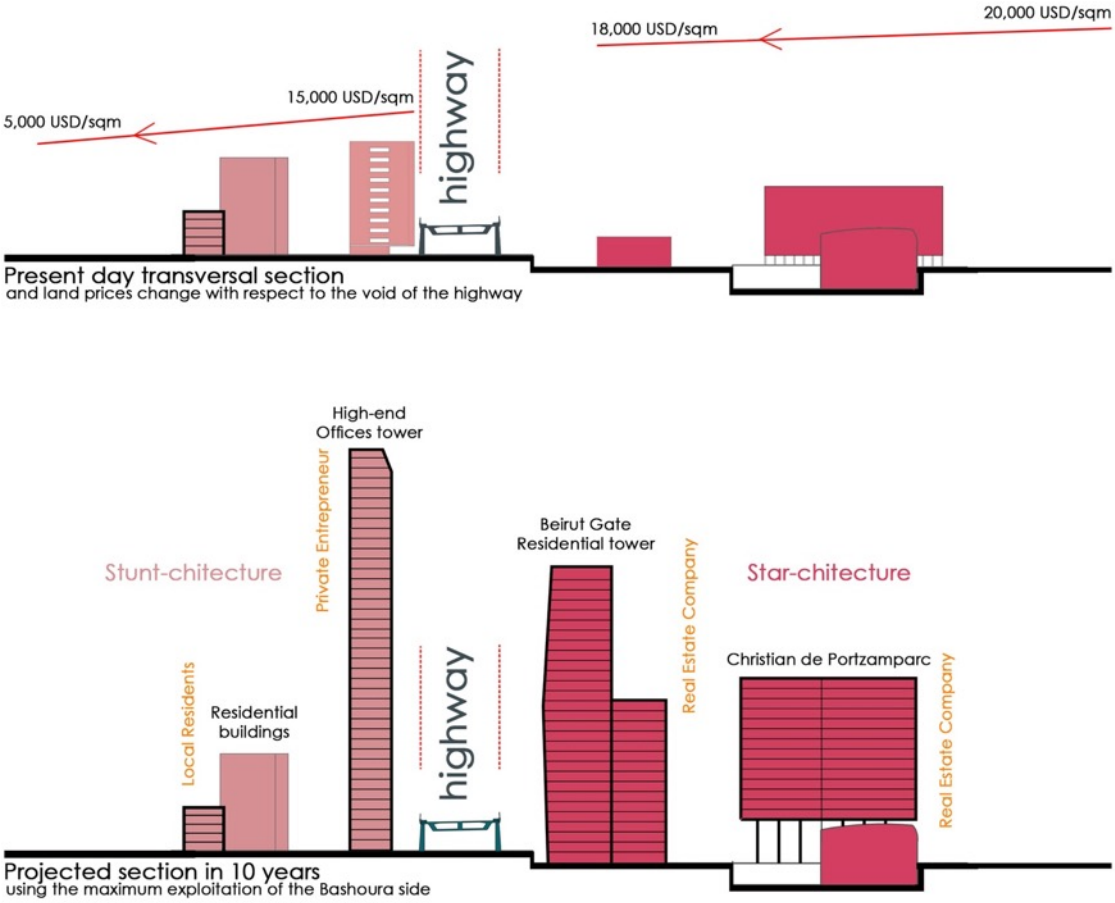

Figure 13: Present and projected development around the highway based on current real estate market dynamics and building regulations.

Figure 14: Map of land prices around the highway.

3. Character and Connectivity

This sections presents a general study of the site's morphology, land-use, and mobility as well as a strategic analysis of the site's legibility, cultural and open spaces. It brings forward the issues of identity, legibility and permeability to better understand how to enhance the quality of the public domain, provide a framework for private development and improve physical, visual and programmatic connectivity around and across the site.

a. Existing block morphology, buildings heights and building condition

From the analysis of the block morphology, projects under development, and existing buildings height and condition, we learned that the site consists of a central zone of large developmental potential and two highly developed zones neighboring it. The former zone lies between the two main connectivity axes traversing the ring road; the airport road and the Damascus road. This zone offers high opportunities for development as it contains many empty plots and deteriorating buildings. On the BCD side, these empty plots are grouped into super-blocks (city-scale blocks) encouraging

monolithic development under corporate legislative planning. On the Bashoura side, neighborhood-scale empty and/or deteriorating blocks can be subject to reparcelization for the infiltration of high-rise buildings. Outside this zone, smaller interventions can take place within highly developed neighborhoods due to the presence of clumps of deteriorating buildings that can be rehabilitated or redeveloped.

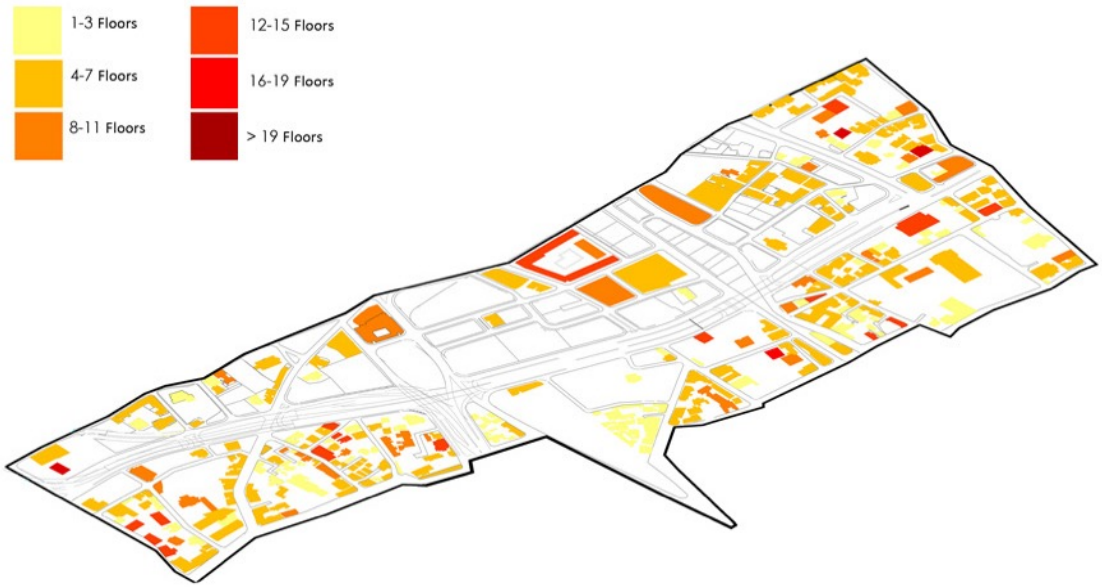

Figure 15: Existing buildings heights

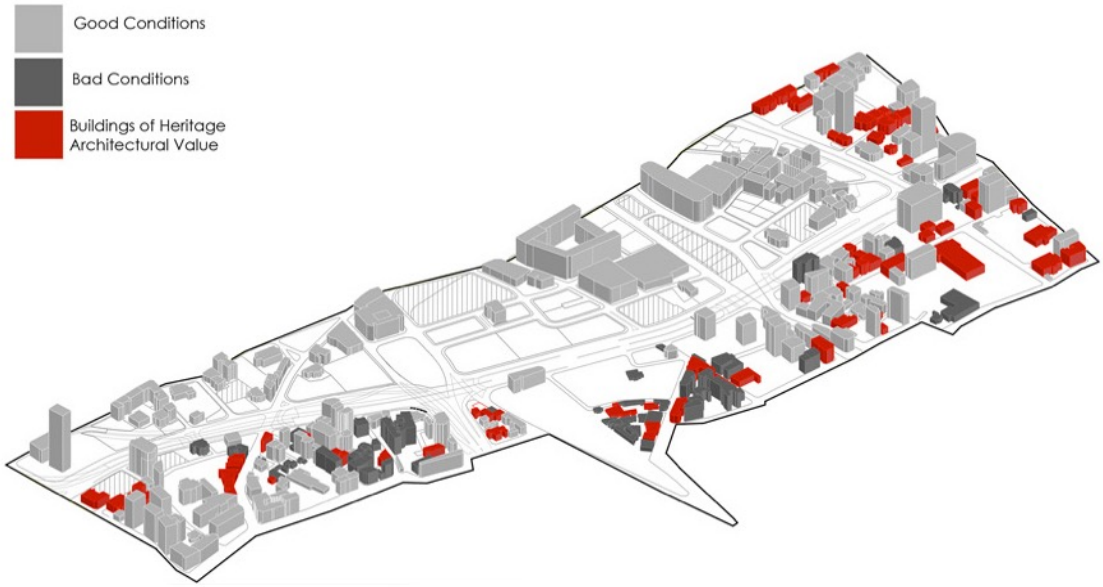

Figure 16: Existing buildings condition

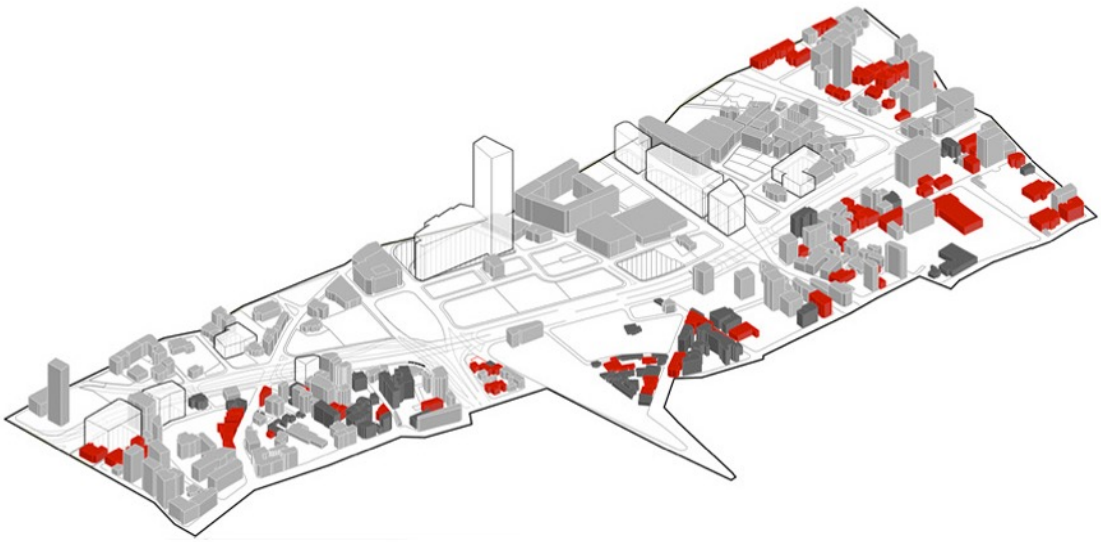

Figure 17: Buildings under development

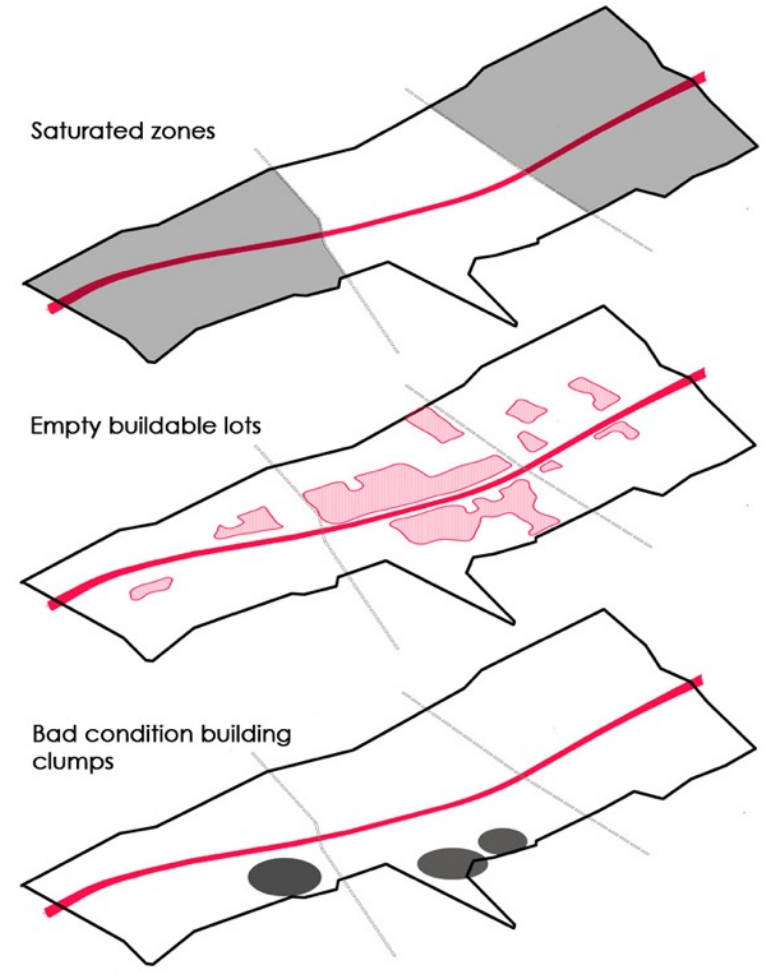

Figure 18: morphological analysis findings separated into layers

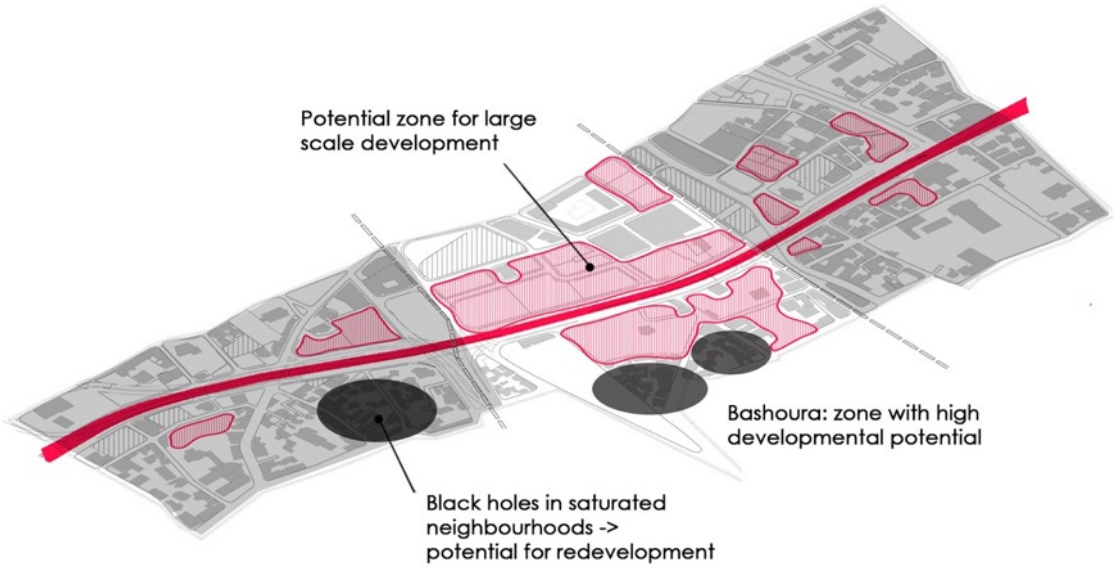

Figure 19: morphological analysis findings synthesized

b. Existing land-use

Though the site was initially perceived to be longitudinally divided by the highway into two zones (a hybrid city center at the north of the highway and the residential neighborhoods at its south), further analysis showed that, from a land-use perspective, the site is again transversally divided into there different land-use zones.

The first zone comprises the north-western edge (Ghalghoul area) of the ring road as well as the Zokak al Blat district and is predominantly residential. It follows an overall district logic; with high income residential use located at the north, middle income residential use at the south, and both areas' services allocated at the edge. The second zone is a central one and lies between the two main connectivity axes traversing the ring road; the airport road and the Damascus road. This zone lacks a predominant land-use and character; yet, it follows the edge logic. At the north, the flexibility of Solidere regulations may lead to the emergence of a cultural edge. At the south, the old

neighborhood urban fabric is being disintegrated and the area will most probably emerge into an edge of high rise buildings of high income residential use. The third zone is a hybrid one and comprises the north-eastern edge (Saifi area) of the ring road as well as the USJ area. This zone also follows the edge logic. Accordingly, commercial uses are allocated at both edges of the highway while the inner northern and southern sides contain, respectively, high and middle income residential uses.

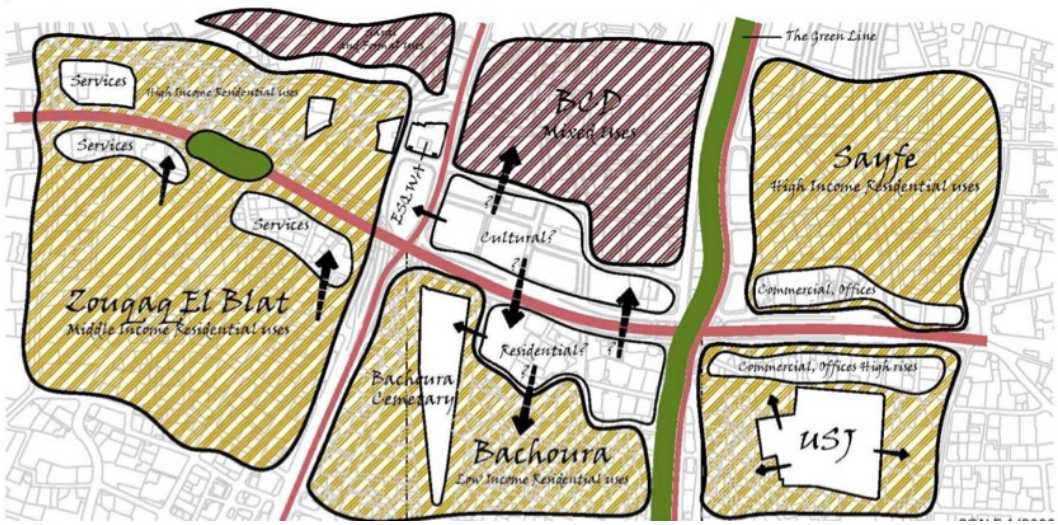

Figure 20: Land-use analysis (Source: Urban and Landscape Design Studio).

c. Existing pedestrian and vehicular mobility

As previously explained in the section about the historical development of the site, the ring-road was planned by Ecochard with the aim of decongesting inner-city traffic and connecting the city center to the sea port, the airport and the hinterland. Today, the ring-road defines the boundaries of Solidere's postwar redevelopment area, connects it to the airport through an international axis (the airport highway) and to the

seaport through a national axis (Damascus street), and serves Beirut's main neighborhoods (such as Hamra, Achrafieh, and Ras Beirut).

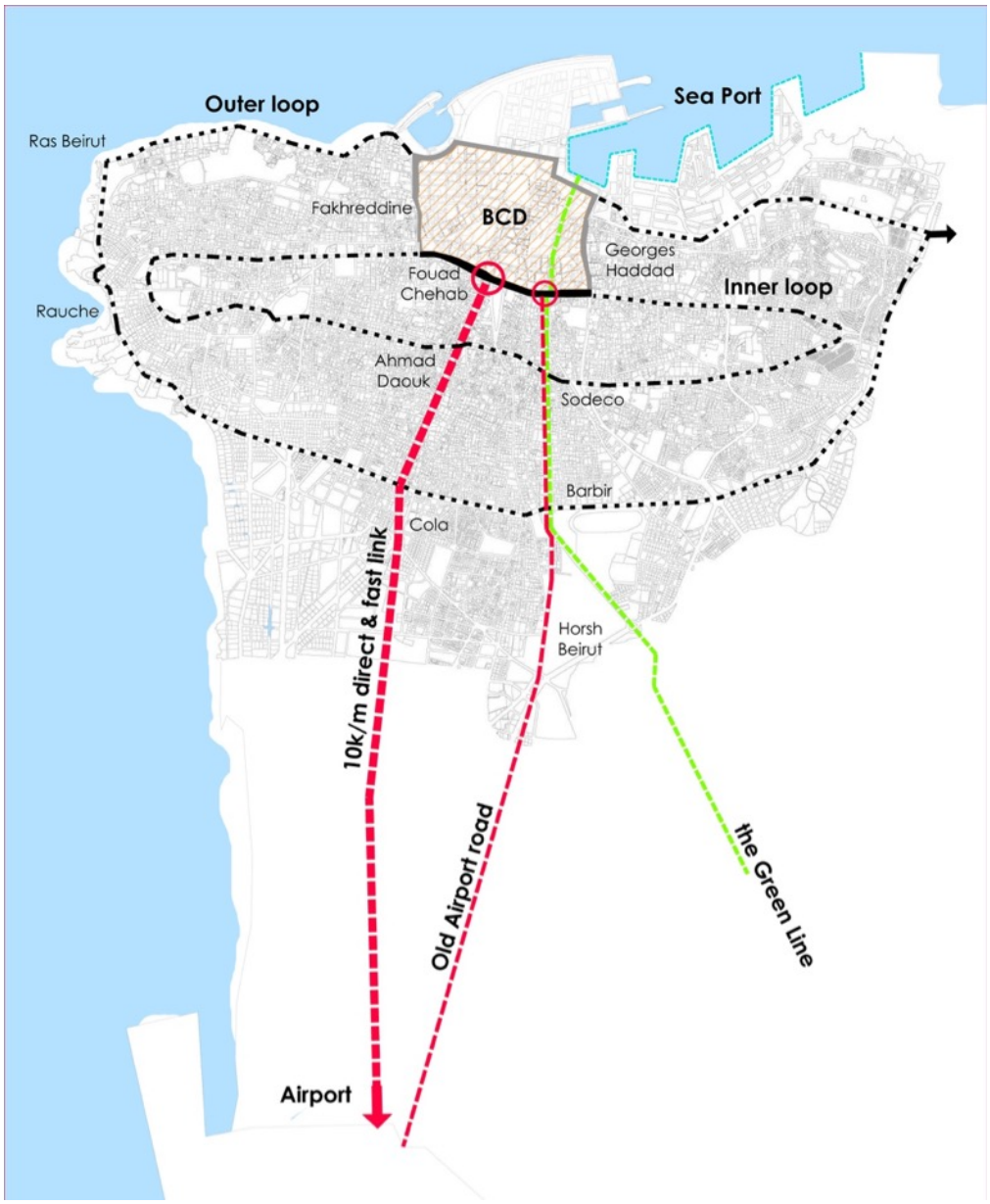

Figure 21: the ring-road and connectivity at a city scale

This transport infrastructure is also the main cause of the physical disconnection and segregation between the city center and its neighboring districts. The ring-road created a huge gap in the urban fabric and a barrier against pedestrian

circulation across it, which highly decreased the permeability to and from the city center. However, the level of such permeability is not constant throughout the infrastructural break and. In terms of transversal permeability levels, the site is again found to be divided into three sections demarcated by the airport highway and the Damascus road. In the Zokak Al Blat section of the highway, through and access traffic are vertically separated. This separation reduces the break's impact on both sides of the highway and the neighborhoods remain safely connected and sharing one public median garden. In the middle section of the highway, the break is accentuated by the horizontal separation between through and access traffic. As a result, the hierarchy of streets that preceded the construction of the highway is no longer existent (i.e. neighborhood entrances and local streets feed directly into the highway), road networks are disconnected and the pedestrian permeability to and from the city center is highly reduced. In the third and last section, there is a partial separation between through and access traffic at the intersection between the Fouad Chehab highway and the Georges Haddad highway. There is also a vertical separation between the ring-road and the Damascus road.

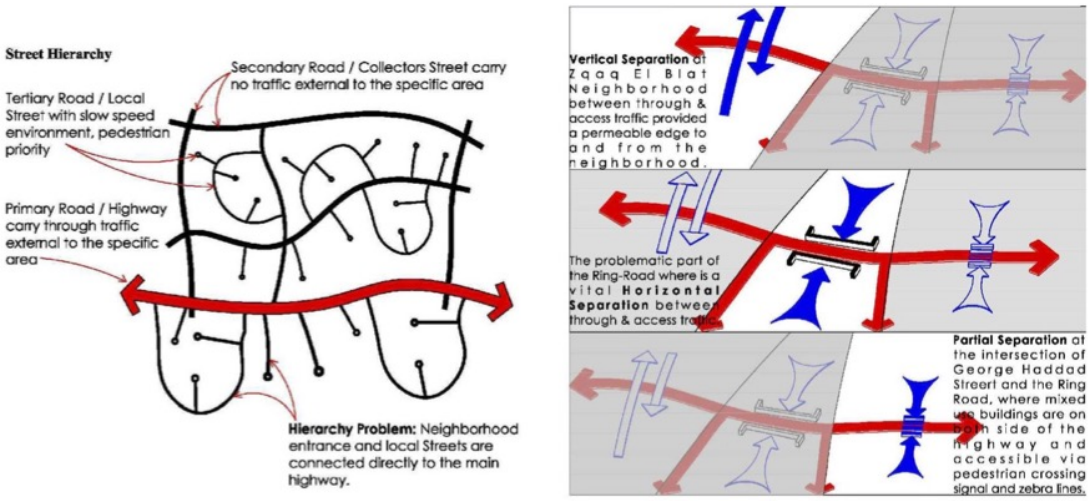

Figure 22: Road hierarchy and permeability (Source: Urban and Landscape Design Studio).

d. Connectivity and legibility

Analyzing the elements of connectivity was essential for the formulation of a strategy that enhances the legibility of the highway as cultural infrastructure. What is meant by connectivity is the physical and visual continuity of the urban fabric across the highway. When mapping connectivity, we did not only consider the highway as a vehicular connectivity element, but also the highway as perceived by its users. The elements mapped thus show the physical and the visual connectivity along the highway as well as the generalized mental picture of the site. These elements are:

- **Nodes:** are strategic intersections and focus points. Three major nodes were highlighted along the highway. Node number one is a vital convergence point where the main vehicular axis connecting the city to the international airport intersects with the highway. Node number two is of high importance as it is where the highway meets the axis connecting Damascus, the BCD and Beirut's sea port. This convergence point is also highly symbolic as it is where the highway meets Beirut's "Green Line." Finally, node number three is of local importance as it is a main point of pedestrian permeability and transversal connectivity between the BCD and the Zokak al Blat District.
- **Paths:** are the routes along which people move throughout the site; they are highly important since these elements organize urban mobility. Two types of mobility networks were highlighted along and around the highway; vehicular and pedestrian networks. The highway itself is mapped as a main path that carries east-west through traffic and allows north-south pedestrian permeability. Other main components of the mobility networks are Solidere's heritage trail Zokak al Blat cultural trail. Where the former is a 2.5 km walking circuit linking archeological sites, historic public spaces and heritage buildings within the historic core of the Beirut city center (Solidere, 2015)

and the later is a trail suggested by non governmental institutions to highlight the cultural value of the Zokak el Blat district and encourage the preservation of the remaining heritage sites within it.

- **Visual landmarks:** are external points of orientation; they are easily identifiable objects in the urban landscape. The “Borj el Mur” and “Borj al Ghazal,” two highly visible buildings punctuating opposite extremities of the highway, are the two main visual landmarks found in the study area. Also, two main visual corridors are highlighted: the axis along Martyrs square and the view from the highway towards the Grand Serail.

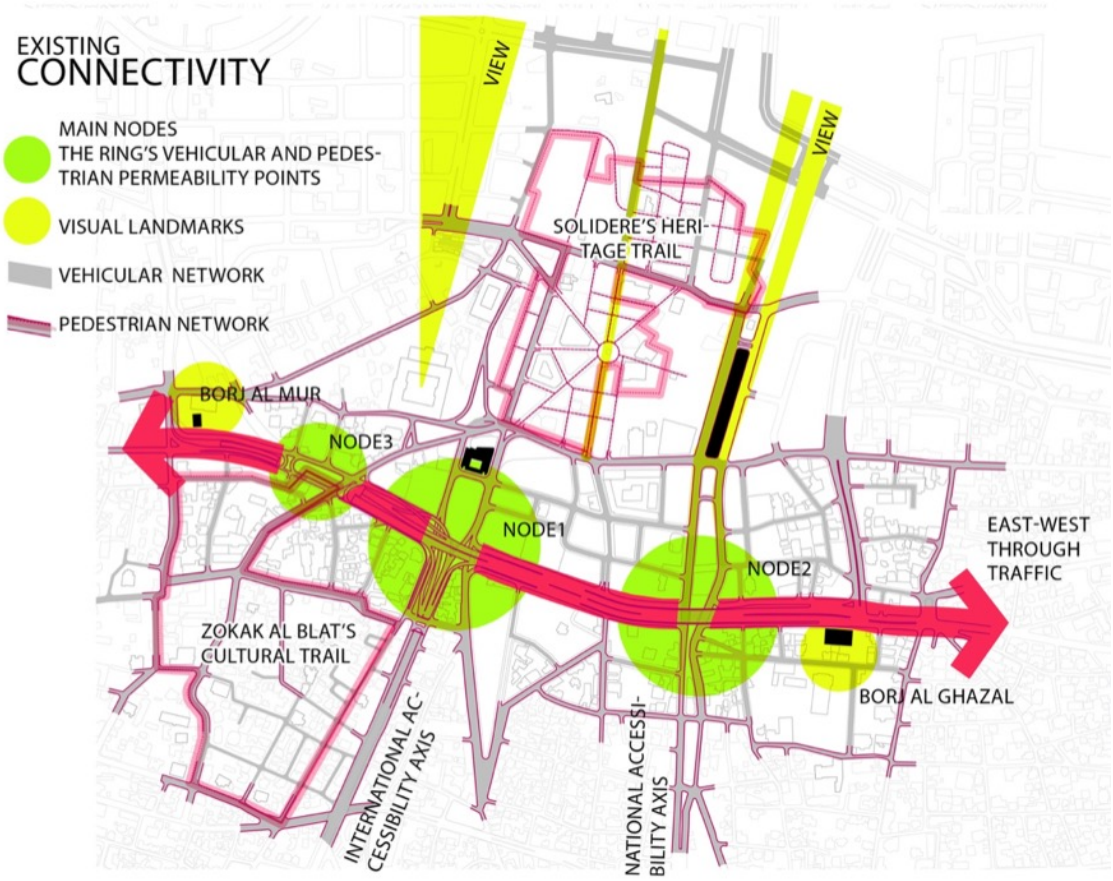

Figure 23: Connectivity and legibility map

NODE 1

NODE 2

NODE 3

Figure 24: Main nodes along the highway

e. Existing, projected and potential cultural spaces

As part of the strategic analysis, the study area's different projected, existing and potential cultural buildings were mapped and categorized as follows:

Figure 25: Cultural spaces, strategic analysis map

- **Planned cultural buildings:** one major projected cultural space is mapped on the BCD side of the interface interface area between the northern and southern edges of the Fouad Chehab highway: "The House of Arts and Culture in Beirut," the first large cultural project to be built in Lebanon. The project, which was not conceptualized as a museum but as an incubator, aims at encouraging creativity, disseminating culture, and educating not only the youth but the whole population. It will be located on the Ghalgoul District, at the foothill of the monumental Grand Serail, which will make it easily accessible and highly visible from the highway (Catalano, 2010).

- **Heritage sites:** in the context of this thesis, this category includes archeological sites and historic public spaces. The heritage sites around the highway are varied and include the Beirut Souks (which retain a 2,500-year-old street grid and Ottoman access gates), the archeological remains of the City Wall, the Roman Baths, Riad al Solh Square, the Nejmeh Square, and the planned Garden of Forgiveness. Several (heritage) classified buildings are also found in the study area but, given their function, were mapped as part of the "Civic and Cultural buildings" category.

- **Civic and religious buildings:** a large number of civic and cultural buildings are found at both sides of the Fouad Chehab highway. On the BCD side, many of these buildings have heritage value and have been restored and classified, such as the Grand Sarail, the CDR building, Beirut's municipality building, the National Conservatoire, the Grand Theatre, Al Omari mosque, St. Luis Capuchin church, St. George Maronite cathedral, St. George Greek Orthodox church, among others. On the southern side of the highway, many of these buildings are located in the Zokak Al Blat district, which was home to the Arab Cultural Renaissance. Some of the civic and cultural buildings mapped in the southern side of the highway include the Zokak al Blat mosque, the

Notre Dame de l'Annonciation church, the Museum of Prehistoric History, the Mono Theater, etc.

- **Private educational buildings and cultural facilities:** this category includes buildings which are dedicated to education and culture, privately owned and generally inaccessible to the public. Some of these buildings include the Quartiers des Arts, the Librerie du Liban Publishers printing house, the Greek Catholic Patriarchal school, the Lycee Abel Kader, the Orient institute, Dar Al-Aytam, the Hariri high school, the St. Joseph university, etc.
- **Potential cultural buildings:** the buildings in this category are privately owned buildings which have a high architectural value and could be dedicated to culture. In the northern side of the highway, most of these buildings have been preserved by Solidere but remain uninhabited. On the southern side; however, many of these buildings are in a very bad condition and are threatened by the current building laws and land speculation.

f. Existing open spaces

Open spaces are sites of public gathering and socio-cultural interaction and expression. In plazas, parks, markets, and natural areas of the city, people from different socio-economic and cultural backgrounds come together in a supportive context of mutual enjoyment. And, as their experiences are repeated, these spaces become vessels that carry communal meaning (Amin, 2008) and cultural flows. Thus the need to introduce the study of these spaces as part of our strategic analysis of the site.

Beirut embraces two networks of open spaces. The first one is created by Solidere which, through its master plan and design guidelines, was able to provide a

fine network of interconnected streets liking various types of open civic spaces (such as public gardens, archeological sites, inner-block communal spaces) into a pedestrian friendly environment. The second network links eight open civic spaces scattered all over the capital, which are Horsh Beirut, the Hippodrome, the Sanayeh Garden, the Syoufi Gardens, and Beirut's Cornice. Between these two networks, we find a number of open spaces scattered along the highway and its periphery.

Figure 26: Beirut's center and peri-center open spaces

The open spaces along and around the highway are plural, distributed and mapped as follows:

Figure 27: Existing open spaces, strategic analysis map

- **Public plazas and gardens:** this category includes the public spaces designed and designated for civic gathering and recreational activities; among the most important plazas and gardens in the study area are:
    - Gibran Khalil Gibran Garden, a 6,000 square-meters public garden in the BCD. This space is located at a major convergence point along the highway (Node no. 1) and is often used as a venue for peaceful and democratic demonstrations.

- Martyrs' Square, a linear public space of historical importance in Beirut. It is located in the BCD, along Beirut's "Green Line" axis, which passes through the second major node identified along the highway (Node no. 2). In addition, this space is visually connected to the sea along an unobstructed view corridor; thus providing not only physical but also visual connections.
- Zokak Al Blat garden, located along the axis of highway. This space is the main permeability node between the Zokak Al Blat District and the BCD (Node no. 3). The garden is well design and serves both neighborhoods.
- Open spaces to be provided by the House of Arts and Culture, a project envisioned as a large, continuous folding plane that aims at eroding divisions and giving way to an inevitable place of interaction (Catalano, 2010).
- Riad Al Solh square, a major national and urban space located in the BCD area. This site has been an important gathering space since Roman times and, today, it is a site of socio-cultural expression at a national level and a converging point for commuters coming from the Bachoura and Zokak Al Blat districts.

- **Residual spaces:** in the context of this thesis, residual spaces are the "non-designed" spaces left over from the act of design. They differ in scale, form and function but are all non-programmed and detached from their surrounding spaces. They include the spaces under the bridge, the traffic islands, and the odd geometric spaces adjacent to intersections. These spaces; however, can be creatively reincorporated into the city fabric.

- **Cemetery:** the Bashoura district houses a large cemetery which, though fenced and inaccessible by the public most of the year, is an important part of the city's

identity. This cemetery is large in size, has historical value, provides a breathing space for the dense neighborhood and becomes very vibrant during Islamic religious occasions. Moreover, given the lack of open spaces in Beirut, it could be rethought to offer space for citizens to walk and relax.

- **Semi-public spaces:** in the context of this thesis, this category includes the (privately owned) open spaces which surround private buildings but are open to the public. One example is the open spaces at the Beirut Souks commercial complex; which are owned by Solidere but are programmed with amenities and activities for public use.
- **Spaces that belong to private cultural institutions:** these are the spaces that surround existing cultural and educational buildings. They are privately owned and accessible to the public during temporary cultural events.

C. Initial Design Intervention

This section presents the initial design intervention for the southern edge of Beirut's Central District. A design solution developed according to the previously presented design vision and concept and mostly based on the assessment and strategic analysis completed during the context appraisal phase. Since it precedes the literature review, this design lacks a solid theoretical framework. However, it is partially informed by the initial explorations on the relationship between mobility infrastructure and the urban form.

1. Strategic Master Plan

As stated in the introduction chapter, the initial design proposed during the Urban and Landscape Design Studio aimed at transforming the southern section of

Beirut's inner city corridor into a cultural infrastructure that connects, carries cultural flows, and heals the different rupture(s) created by the highway. In an attempt at integrating the highway into the city fabric as a cultural artifact and capturing the synergy of the significant buildings and spaces dispersed around it, the below strategic master plan (Fig. 28) was initially proposed.

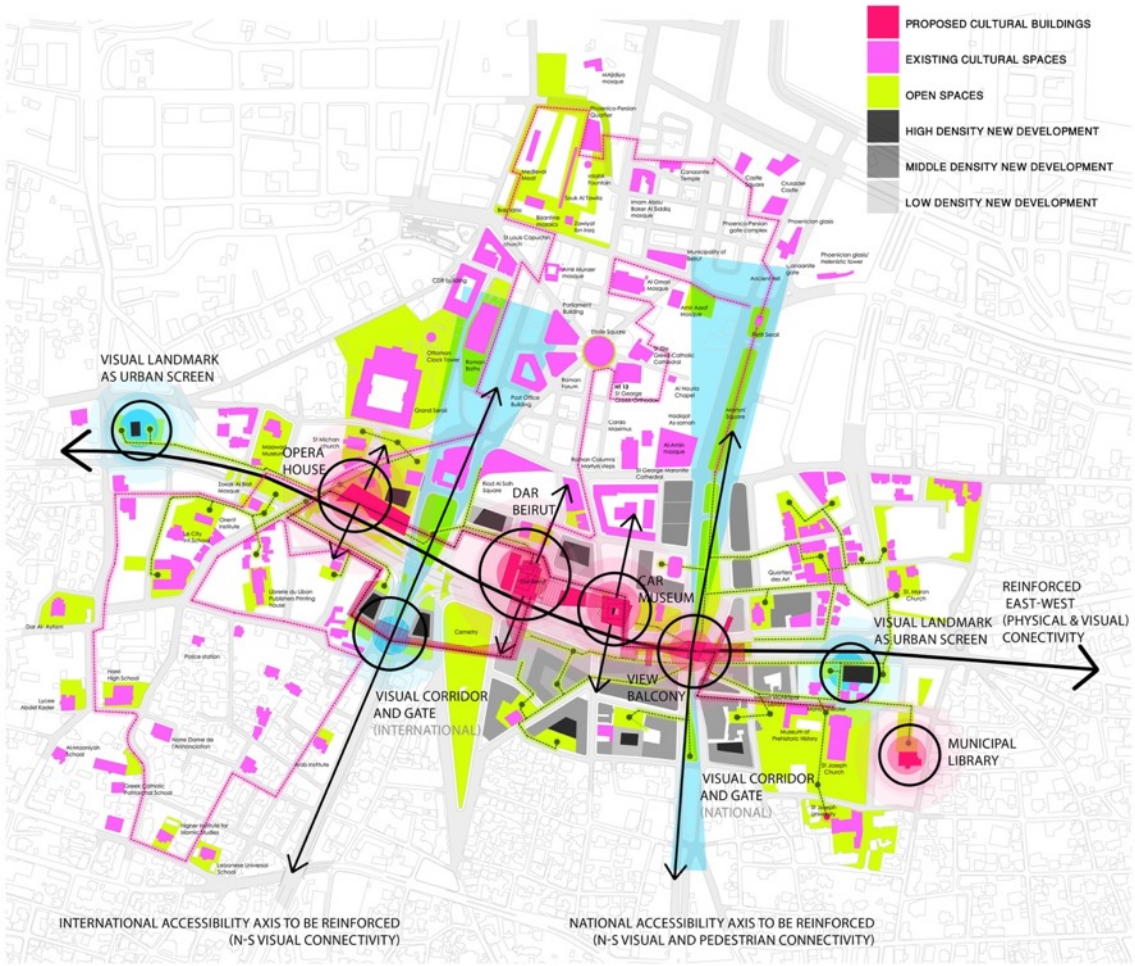

Figure 28: Strategic Master Plan

The initially proposed strategic master plan aimed at:

- Promoting mobility, interaction and cultural exchange between the city center and its periphery by improving pedestrian mobility and linking existing,

projected and new cultural and open spaces from both sides of the highway into a network of cultural spaces.

- Redefining the BCD boundary as a cultural edge.
- Enhancing the legibility of the highway as cultural infrastructure and transforming its non-place into a dynamic place by injecting the spaces under the highway with cultural activities and introducing open spaces (elevated platforms) over the highway (as part of new, site specific, architectural typologies).
- Providing solutions for the conservation and redevelopment of buildings with high architectural value located in the Zokak Al Blat area.
- Linking Solidere's heritage trail to the cultural trail identified in the Zokak al Blat district.

Figure 29: Vision conceptual contextualization (left image source: BIG)

The site was envisioned as wide field for cultural interaction and the initially proposed master plan was based on a general connectivity strategy. This strategy included improving the physical, programmatic and visual continuity along and across the highway. Physical mobility was reinforced by: a) introducing elevated platforms to bridge over the highway and facilitate the north-south pedestrian mobility between the city center and the peri-center and b) creating a coarse-grain network of open spaces

and pedestrian passages at ground level to facilitate mobility and socio-cultural interaction between neighborhoods and all over the site.

Figure 30: Connectivity Strategy

The programmatic connectivity was reinforced by linking existing, projected and new cultural and open spaces on, across and along the highway into a network of cultural spaces. Also, part of this strategy includes combining Solidere's heritage trail

and Zokak al Blat's cultural trail into one itinerary to promote cultural flow to and from the culturally rich Zokak al Blat district.

Figure 31: Land-use strategy

The visual connectivity as well as the enhancement of the legibility of the highway was attained by reinforcing the site's main accessibility axes, main nodes and visual corridors. The redefinition of BCD's border is also part of this strategy. According to current master plans and regulations, the BCD is giving its back to the rest of the city and the development to take place at the southern edge of the highway and along Martyr's square axis will further reinforce this center peri-center physical and visual segregation. In order to prevent such segregation, one of the main objectives of the strategic master plan is to provide guidelines for development of BCD's border as a cultural edge. Accordingly, the main plots dedicated to culture in the BCD included the block that will house Dar Beirut, the block containing the bombed Mar Mansour Church, and the BCD plots along Marty's Square Axis and the development rights of these plots were transfered to the Bashoura and Zokak al Blat areas.

Figure 32: BCD's edge redefinition and the relevant development redistribution strategy

2. Design Development

Following the strategic master plan, students were asked to develop a section of the master plan. In the current case, the action area developed included the middle section of the highway and the main node of intersection with Martyr's square axis. This particular section of the site, which is the most problematic, was found to be the most suitable zone for development as it includes: a) the projected Dar Beirut cultural project, b) the main sections of the highway that need to be bridged to improve pedestrian mobility and where the elevated platforms and new building typologies would be located, c) the BCD plots to be dedicated to culture, d) a major node (where the highway meets with Damascus road), and e) unused space under the highway that needs to be injected with activity.

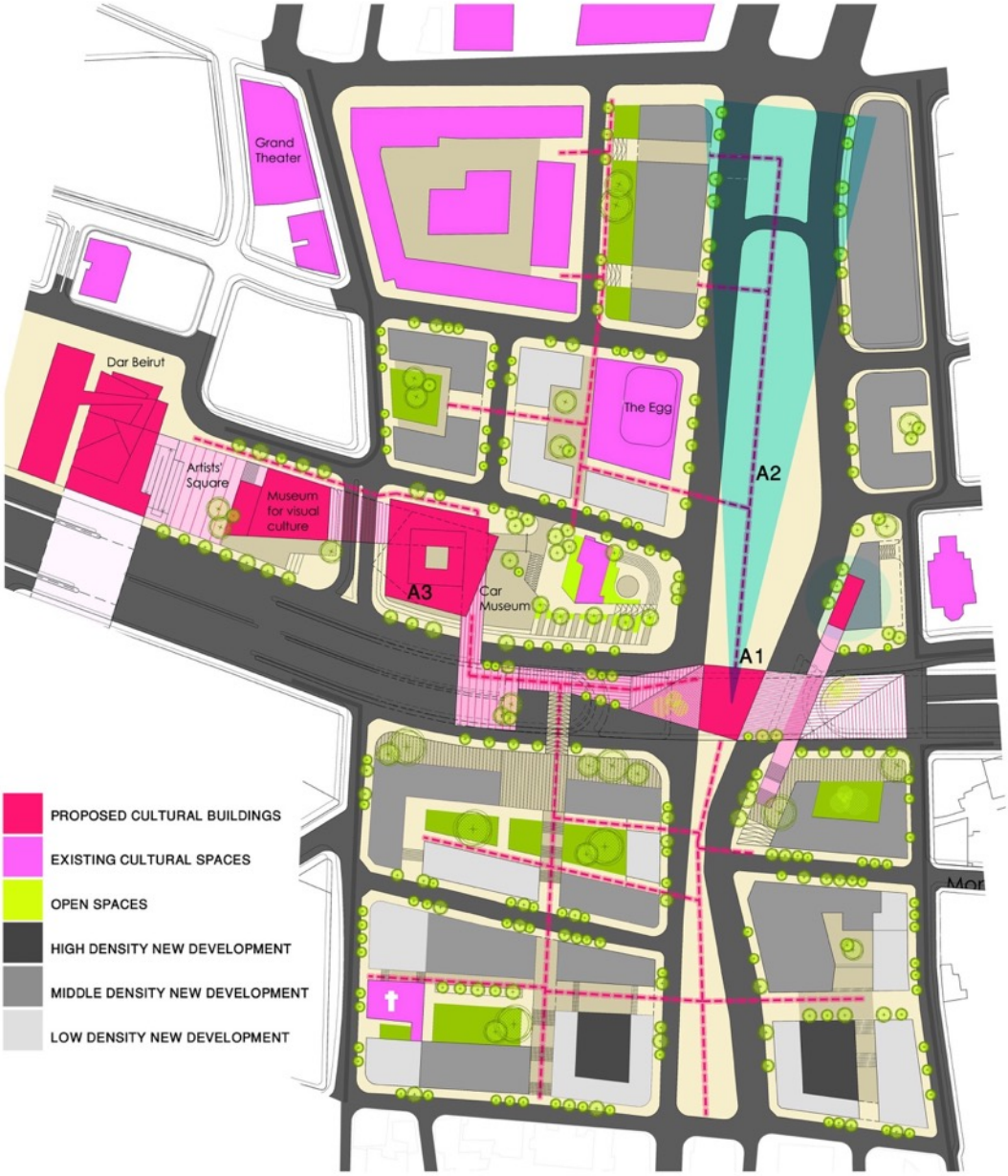

Figure 33: Developed design

The developed design consisted of:

- Adopting a node strategy for the the node where the highway intersects with Martyr's square. This strategy aimed at: 1) equipping the currently unused spaces under the bridge for exhibitions and spontaneous cultural activities, 2) introducing

underground performance areas visible from the ground level, and 3) introducing an elevated platform as a public open space and vision balcony.

- Reinforcing Martyr's square axis as a main visual corridor. For that purpose, the development rights from the plots located along this axis were redistributed to both sides to frame the view towards the square and to create a major (national scale) open space.

- Proposing a new architectural typology that provides visual connectivity as well as vertical and horizontal mobility.

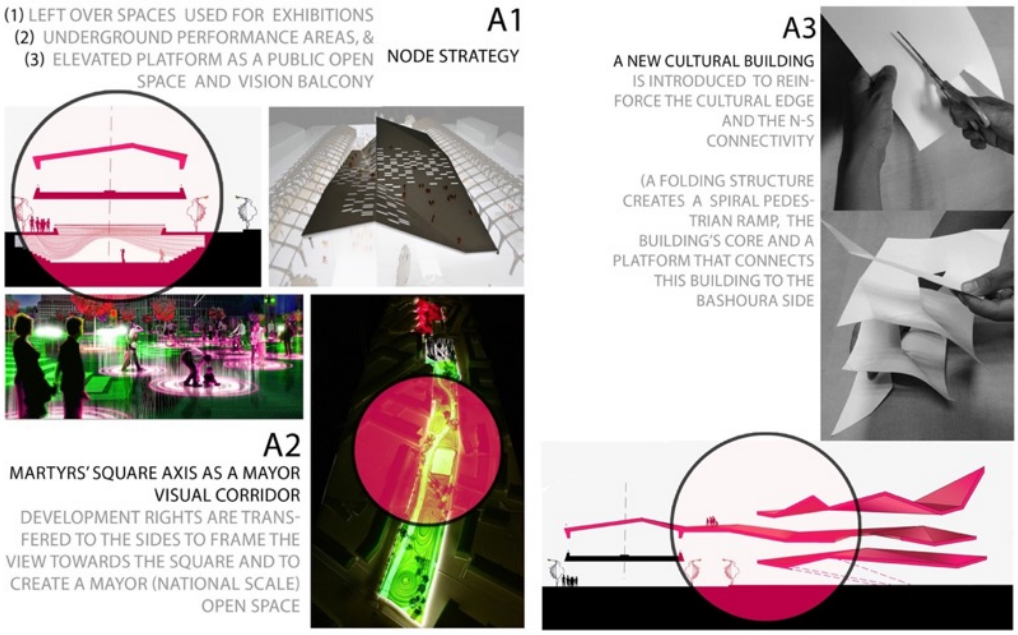

Figure 34: Developed design elements

This typology was envisioned as part of a continuous structure that would bridge over the highway or evolve as vertical landmarks accentuating main nodes. The "folding" design of the Dar Beirut building, the major cultural center that will visually link the city center to the highway, served as inspiration for envisioning the proposed continuous structure as a folding plane.

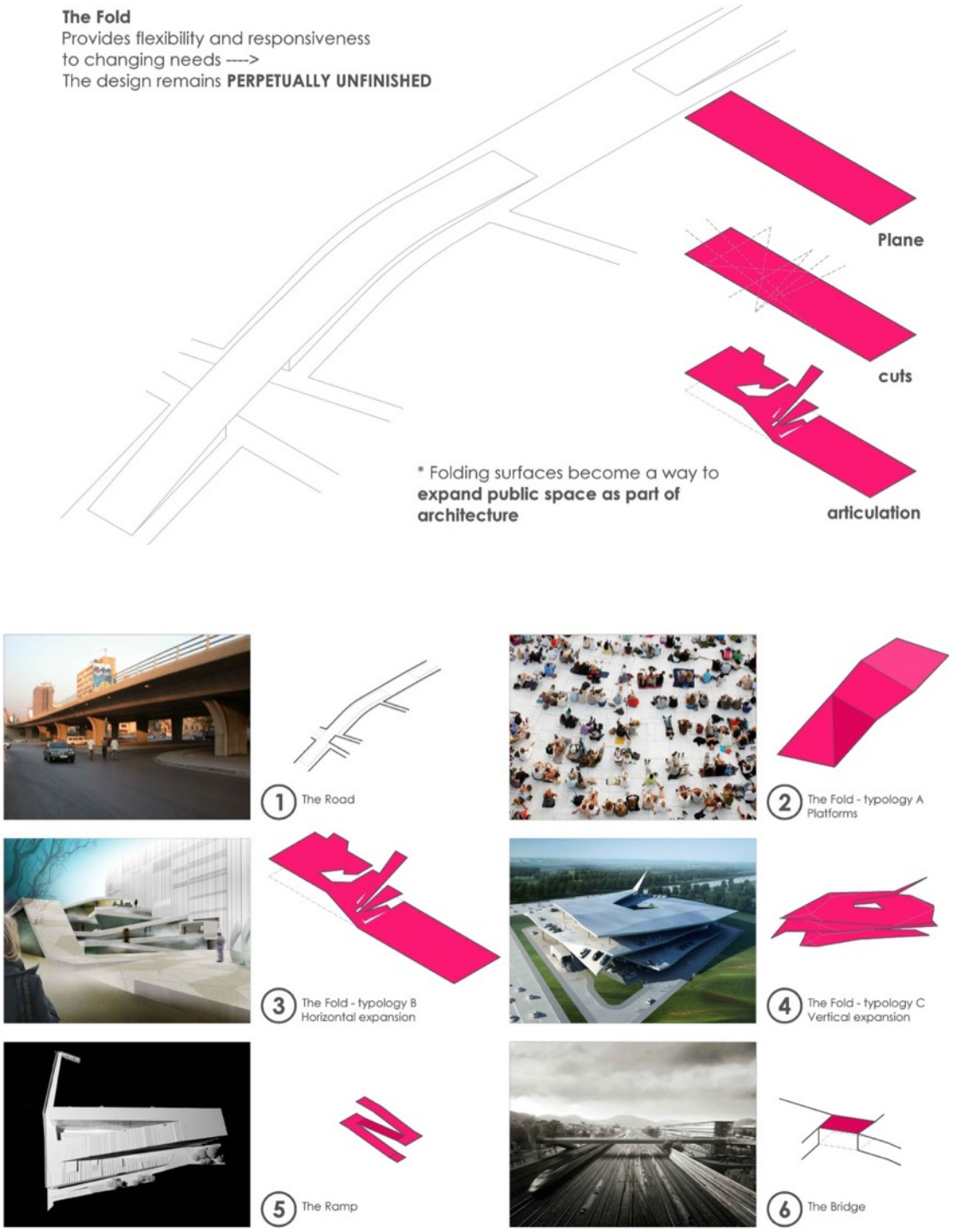

Figure 35: Design elements making up the proposed folding infrastructure.

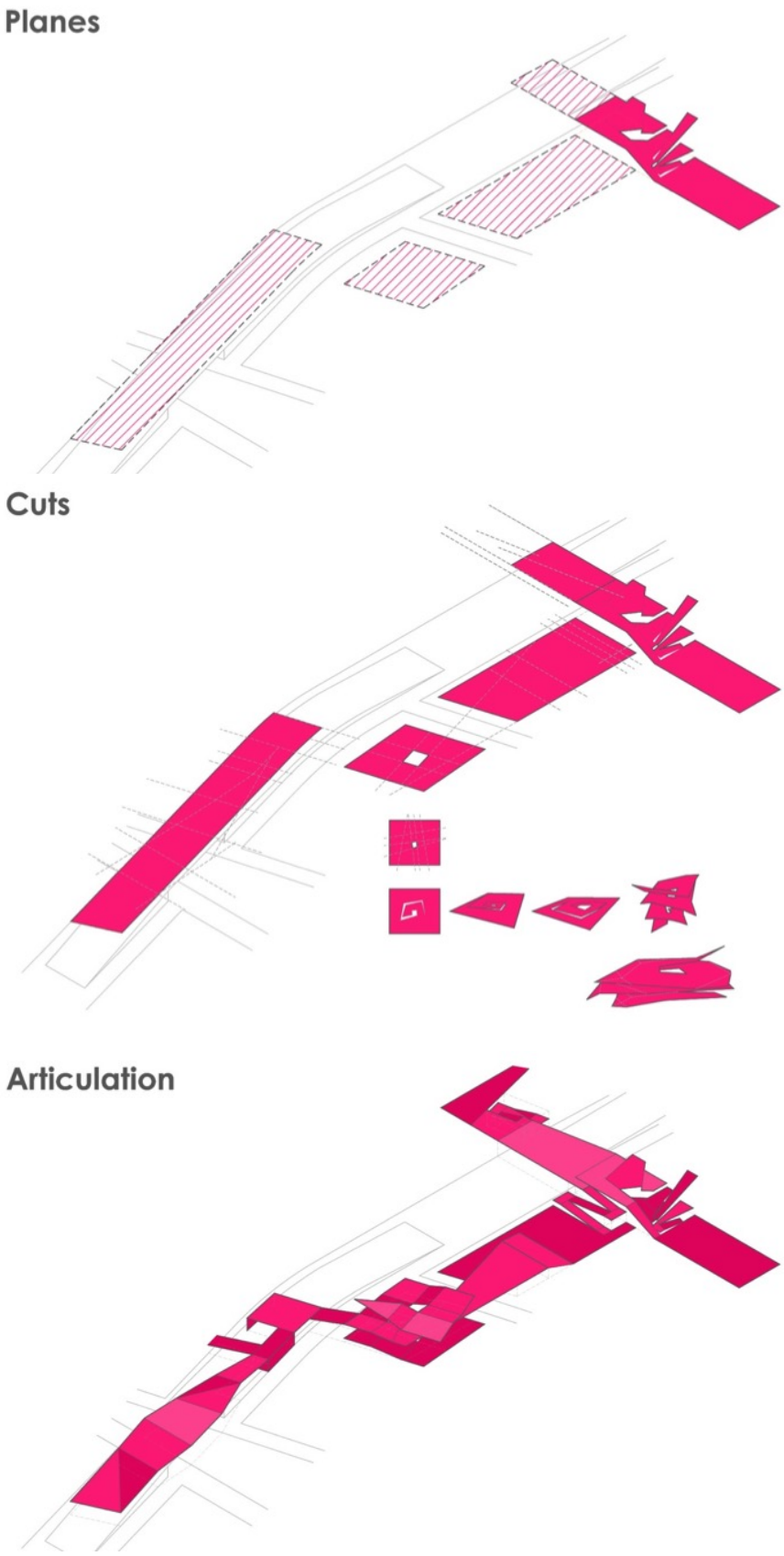

Figure 36: Evolution of the folding structure along and across the highway.

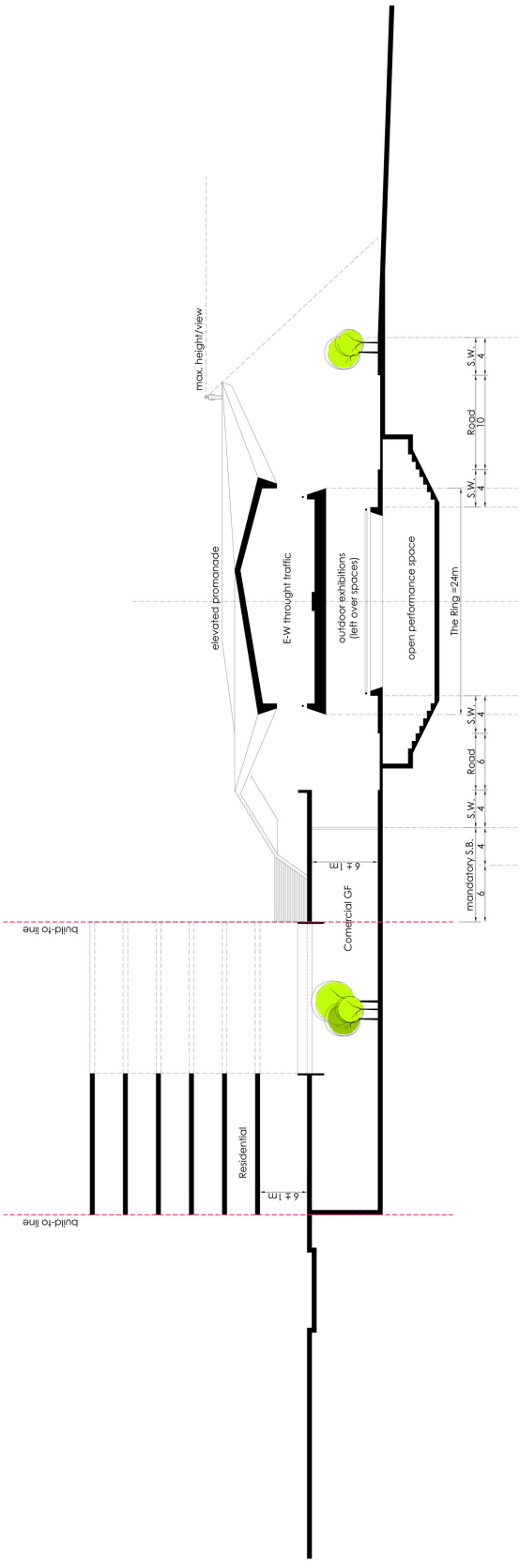

Figure 37: Design guidelines. Section across action area A1

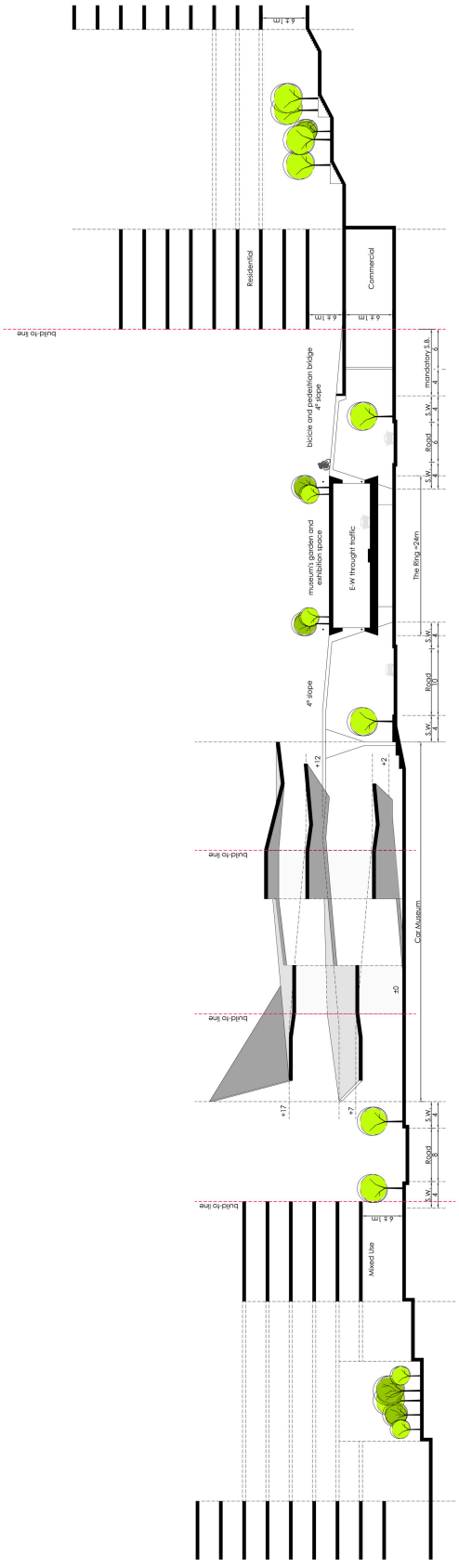

Figure 38: Design guidelines. Section across action area A3

CHAPTER III

LITERATURE REVIEW

This chapter situates the design studio proposal within relevant theories, researches and case studies on the reconceptualization of stagnant urban sites in general and infrastructural breaks in particular; theories and projects that aim at exploring the value of such sites as robust design opportunities to strengthen communities and revitalize cities.

As illustrated in the previous chapter, infrastructural breaks are byproducts of modernists' segregation between transport/service infrastructure and social/cultural infrastructure; a segregation between functional urbanism and integral urbanism that works at the intersection of the design fields of architecture, landscape architecture and urban design. The first and second sections of this chapter thus explore, respectively, theories and case studies from the emerging fields of Architectural Urbanism and Landscape Urbanism and the perceptual dimension of urban design, highlighting the need to approach infrastructure from a socio-economical perspective as opposed to a technical perspective (Paul, 2011).

The definitions of culture and cultural infrastructure are discussed in a third section of this chapter, along with a case study which highlights how the highway can be re-conceptualized as cultural infrastructure and a work of art per se.

The fourth section includes the lessons learned from the case studies and concludes with a set of recommendations for the revision of the initial design proposal along the five generic issues of urban design: identity, ecology, infrastructure, civic space, and private development.

In short, this chapter is an attempt to re-assess the problem-solving/ inductive approach of the design studio in light of a deductive an approach based on theoretical investigation. This is done by: 1) studying different design principles for the reclamation and reconceptualization of problematic urban sites like stagnant infrastructural landscapes and infrastructural breaks, 2) understanding what is meant by culture, cultural infrastructure, and the highway as cultural infrastructure, 3) extracting a set of recommendations in order to adjust the initial proposal for Fouad Chehab highway in line with the extracted principles.

A. The Architectural Urbanism Approach to Infrastructural Breaks

Until recently, the definition of what might constitute an architectural approach to infrastructure and infrastructural breaks remained absent from the contemporary urban discourse. However, some architects have started to look outwards to other disciplines, such as ecology and landscape urbanism, to provide clues for dealing with complex contemporary urban sites such as infrastructure, infrastructural breaks. These fields have contributed significantly to their understanding of hybrid and complex urban conditions and to their realization that the challenge posed by the contemporary city should not be considered as the management of segregated disciplines but as the possibility of a cross–disciplinary framework whereby any architectural contribution to the discussion ought to draw upon the methodologies and strengths of the architectural discipline itself (Seewang, 2013). The question of shared knowledge is thus raised.

As Christopher Lee and Sam Jacoby explain in ‘Typological Urbanism and the Idea of the City’ (2011) and their later work, “architecture, having an established body of knowledge concerned with the theory, analysis and design of built form, offers a

rational entry into the questions of what this shared knowledge could be" (Jacoby, 2015, p. 97); such knowledge is based on *typal* and *typological reasoning*.

Typal reasoning is a primarily conceptual thinking and typological reasoning is the diagrammatic and methodical resolution of formal models (Jacoby, 2015). It is based on these conceptions that architectural urbanists see that the discussion of type and typology can unfold today in a more considered manner in the field of urban design and the city. "Essential to making this typo–diagrammatic knowledge available to the multi–scalar city is the premise that architecture does not only exist as a specific object at one scale, but as a generic possibility at many scales. If urbanity then can be said to emerge significantly from the synthesis of fundamental types – buildings and urban armatures critical to a city's formation – type can be defined as a specific spatial, socio–cultural and political product that as much derives from the city as it organizes its abstract idea, whereas typology enables the translation of generic into specific practice driven and structural solutions. Therefore, both type and typology are interrelated and necessary to conceptualize, design and manage an urban plan, and suggest a concurrent reading of the city at different scales. With this, an analysis of the common organizational and structural diagrams of type, its deep structures, becomes critical to make typology translatable and operative to design. The methodology of typal and typological reasoning is grounded in architecture's disciplinary knowledge and, once extended to the scales of the city, can be termed architectural urbanism" (Jacoby, 2015, p. 97).

In an attempt to illustrate what kind of projects and research is associated with architectural urbanism in general, and how infrastructure and infrastructural breaks can be addressed by typal and typological thinking in particular, a relevant project by Fadi

Mansour (2009), a student at the Architectural Association in Diploma School and the Projective Cities program, is discussed below.

1. Case Study 1, Reframing the City: A Monument of Radical Neutrality

The difficulty to conceptualize the meaning of the public and public spaces in the contemporary city in general, and in Beirut in particular, is the starting point for the project 'Reframing the City: A Monument of Radical Neutrality' (2009). The specific predicaments that provoked this project are: 1) the marking and occupation of all of Beirut's territory by political and religious factions, 2) the presence of the abandoned void of the Green Line as the last public ground separating the political and sectarian alliances of East and West Beirut and 3) the presence of the American University of Beirut (AUB) as the only successful example of an academic institution operating outside the factional identities and providing a (privatized) public and neutral void that allows rational debates and a multiplicity of public activities at the level of the city. Accordingly, the university as a fundamental type is considered to project a *univerCity* or a city–campus urban solution (Jacoby, 2015).

The design proposal derives from a type study of mat–buildings which are urban forms "with a horizontal low-rise expansion in which interior space, landscape and city are interlaced and organized by a unifying system of repetitive modules." These structures, which are part building and part city, address both the material specificity of architectural design and the infrastructural possibilities of an urban fabric. Following a type study of mat–buildings in general and Le Corbusier's Venice Hospital project (1965) in particular, Mansour develops a mega-structural design solution for the Green Line infrastructural break. (Jacoby, 2015).

Figure 39: Campus aerial view based on Google Earth image (Source: Mansour, 2009).

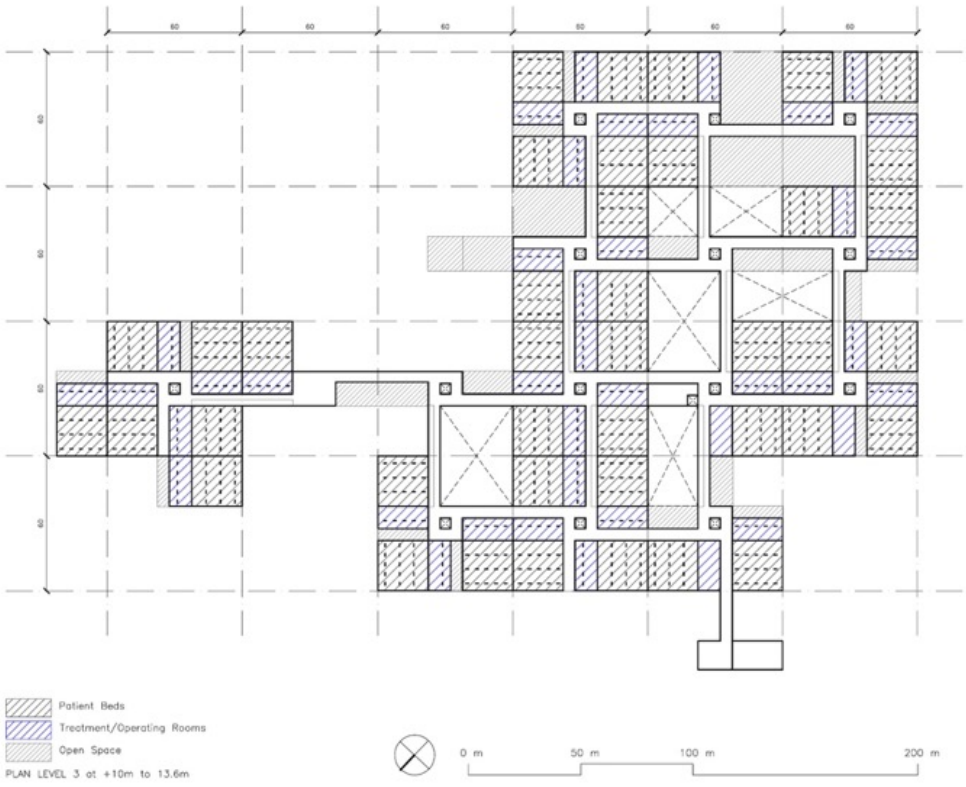

Figure 40: Plan of the Venice Hospital (Source: Mansour, 2009).

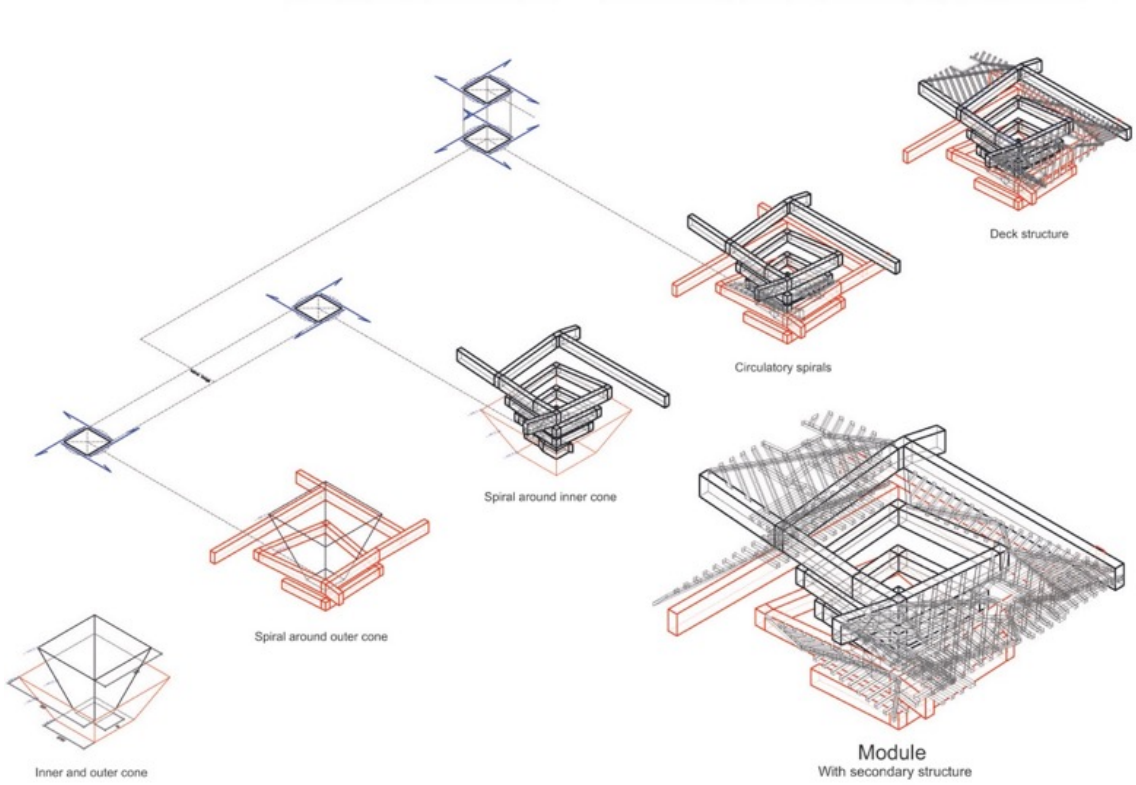

Figure 41: Development of typical module (Source: Mansour, 2009).

As explained by Jacoby (2015) and as illustrated in the above image, two spirals spreading in different directions, and of different height and diameter, are overlaid. The arms of lower spirals are connected and articulated as one floor-high spaces filled with university programs. Likewise, the taller spirals form an upper, programmed floor for the campus. It also creates open (space above the upper floor) and covered decks (space below the upper floor) that are accessible to the public and act as incubators of public programs under the patronage of the institutional campus. These spirals are scattered along the Green Line axis to form a mega-structure that covers an entire city quarter (Jacoby, 2015).

Figure 42: Ground floor and campus plan (Source: Mansour, 2009).

The created mega-structure frames views of the city and its destroyed war remnants, which, either rehabilitated or maintained as monuments, become part of the campus. As explained by Jacoby (2015), at the ground level, the structural volumetric modules are placed in empty plots left behind by the civil war. Above them, the building's platforms soars as a continuous elevated green line. It reinforces the edges of the green while maintaining its character as a void; yet, the void itself is transformed into a permanent monument. A monument formed by collective urban spaces that argue "political and social autonomy as conditional to academic institutionalization" (Jacoby, 2015, p. 104) and thus provide a public exchange and coexistence that could not be possible otherwise (Jacoby, 2015).

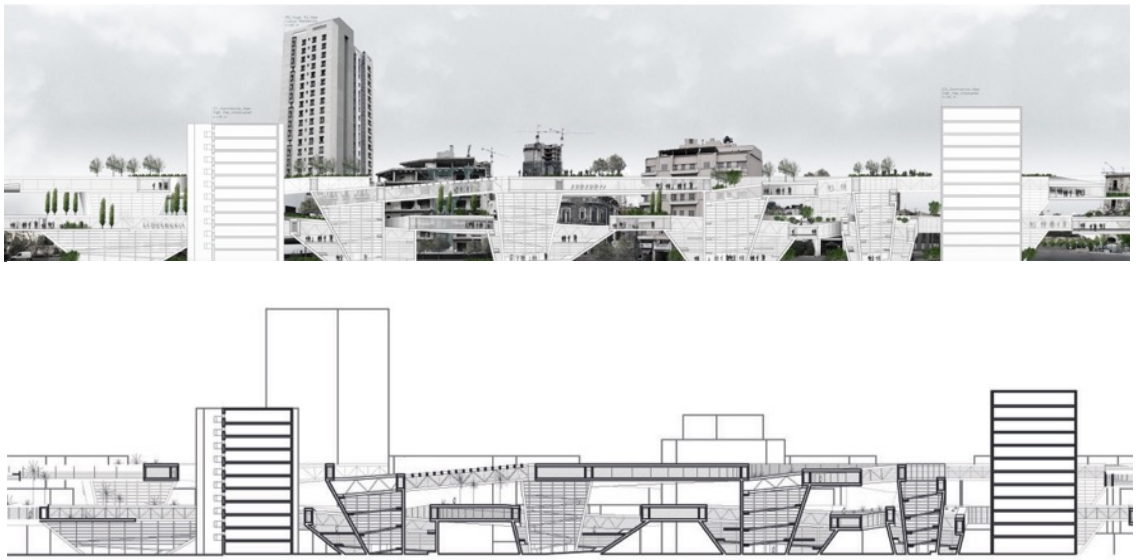

Figure 43: Longitudinal Section (Source: Mansour, 2009).

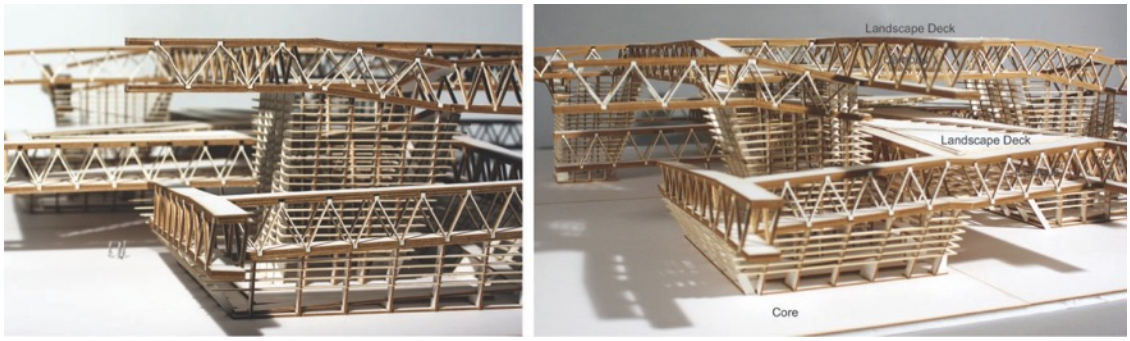

Figure 44: Three dimensional model (Source: Mansour, 2009).

B. The Landscape Urbanism Approach to Infrastructure and Wastercapes

Landscape urbanism is a recent discipline that considers "landscape as the operative ground for infrastructure and any landscape intervention as inherently infrastructural" (Carlson, 2013). As explained by Gray (2011), this discipline seems to offer a way to consider the complex conditions of contemporary cities in general, and of infrastructural breaks in particular, as it breaks down professional distinctions, foregrounds infrastructure, and tackles biodiversity and the much larger dichotomy of

nature versus culture (Gray, 2011). For the purpose of this discussion; however, it is important that “landscape” is understood not as “land” or “environment” but as a “complex product of a given culture in a given place at a given moment of time” (Alrez, 2005, p. 4). It is on this basis that the landscape discourse shifts from *landscape-as-picture to landscape-as-process* whereby landscape is considered a lens through which to study our cities; a lens with the “capacity to theorize sites, territories, ecosystems, networks, and infrastructures, and to organize large urban fields" (Corner, 2006).

Explorations in landscape urbanism have focused on infrastructure as the most important generative public landscape. As explained by Elizabeth Mossop in ‘Landscapes of Infrastructure’ (2006), in the course of the twentieth century, infrastructures have been “considered and evaluated solely on technical criteria and somehow exempted from having to function socially, aesthetically, or ecologically.” Today, landscape urbanism highlights the designer’s need to deal with roads, parking facilities, leftover spaces under elevated roads, drosscapes, etc. Through an “instrumental engagement with ecological processes as well as with the function of infrastructure and the social and cultural needs of the community” (Mossob, 2006). But how does this engagement take place? What really is landscape urbanism in the practical work? As previously mentioned, landscape urbanism considers landscape as the analytical tool through which to study our cities. Yet, since landscape is interpreted differently, this discipline resolves into different perspectives based on different interpretations of landscape and different approaches to form. According to Christopher Gray (2011), the two most distinct modes of landscape urbanism are the Machinic mode by Mohsen Mostafavi and the Field Operations mode and James Corner. Both rely on a very specific analysis of the site to identify underlying forces. While the Machinic

landscape mode seeks to create an architectural form through an abstract mechanism (usually a computer algorithm); the Field Operations mode seeks a less determined end product. The designer acts by "operating" on these forces and comes up with an array of dynamic infrastructural conditions of social and ecological character. These are then used to create *a process-oriented master plan* which stresses the integration of landscape and its processes over time (Gray, 2011). In spite of the different approaches adopted by landscape urbanists, and by way of providing a schematic outline for the practice, four general themes other than infrastructure are highlighted by Corner (2003) and herein charted:

- **Horizontality**

Horizontality, or the staging of surfaces, entails a shift in emphasis from objects to fields; from the figure-ground compositions of urban fabrics to generative fields that organize dynamic relations between the conditions they host. In his discussion of horizontality, Corner (2003) highlights that it maximizes opportunities for roaming, connecting, interrelating and assembling and that; as a result, horizontal surface strategies allow an almost infinite range of flexible arrangements that function as infrastructures and establish new conditions for future development (Corner, 2003).

- **Forms of processes**

This theme addresses processes over time. The underlying idea is that the formal determinism of Modernism and New Urbanism (according to which new physical structures produce new patterns of socialization) has exhausted its run and that the processes of urbanization are more significant than urban forms for shaping urban relationships (Corner, 2006). Consequently, landscape urbanists argue that the search

for new organizing structures should be derived from a "Utopia of process rather than a Utopia of form" (Corner, 2003, p. 61) whereby emphasis is given to how things work instead of how they look like. This is not to say that formal and scenic qualities of space are not important but to demand that physical forms be valued also for their instrumental and productive effect (Corner, 2003).

- **Techniques**

This theme deals with the operational or working method; how does one conceptualize urban sites that function across large range of scales and implicate a multitude of players? Though the orchestration of a collective of experts and ideas towards new syntheses. Accordingly, landscape techniques (such as mapping, cataloguing, layering, phasing, etc.) may be combined with urbanism techniques (such as planning, zoning, allotting, marketing, etc.) to create a larger set of tools than designers have had in the past (Corner, 2003).

- **Ecology**

This theme conceptualizes the landscape as ecosystem; "Cities and infrastructures are just as 'ecological' as forests and rivers;" (Corner, 2006, p. 29) everything is connected to everything else. Corner (2006) speaks of ecology as describing not a remote 'nature' but more integrative 'soft systems' or adaptive fields that are responsive and evolving. This is an attractive idea for Landscape urbanism as it bears upon the continual need of cities to be flexible and respond to constantly changing needs. It also sheds light to a reexamined activity in design practice that is the active stirring of ecologies in order to produce new transdisciplinary alliances and new kinds of public space (Corner, 2003).

Finally, in order to illustrate the kind of projects associated with Landscape Urbanism in general, and with the transformation of waste landscapes into cultural infrastructure in particular, the design scheme proposed by Bernard Tschumi for the Parc de la Villette competition (1982) is discussed below.

1. Case Study 2, Parc de la Villette

Among the first projects to orchestrate the urban program as a landscape process was the 1982 Competition of Parc de la Villette (Waldheim, 2006). The design schemes by Bernard Tschumi (first prize) and Rem Koolhas (second prize) proposed landscape as the basic framework for the urban transformation of a 125-acre site that had once been Paris's largest slaughterhouse This competition began a trajectory of post-modern urban park, "in which landscape was itself conceived as a complex medium capable of articulating relations between urban infrastructure, public events, and indeterminate urban futures for large post-industrial sites" (Waldheim, 2006, p. 40). The winning scheme, by Bernard Tschumi, represented a theoretical leap in the growth of the landscape urbanism discipline as "it formulated landscape as the most suitable medium through which to order programmatic and social change over time" (Waldheim, 2006, p. 40).

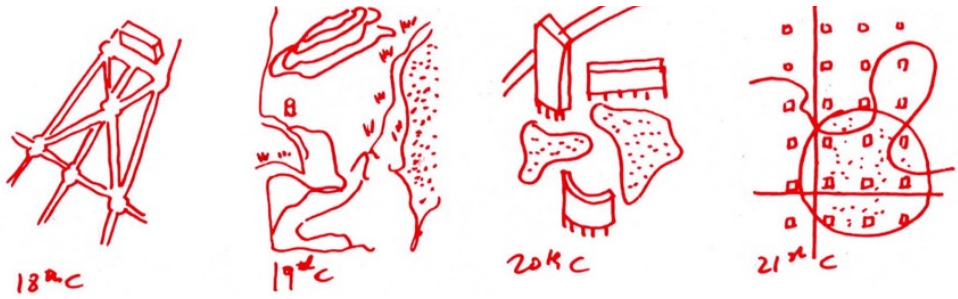

Figure 45:La Villette's brief called for the imagining and design of an urban park for the 21st Century (Source: julianrich.blogspot.com).

As explained by Tschumi in 'Importing the City into Architecture' (2012), the motivation behind this new way of thinking was trying to find another way to look at architecture. The city, intensely fresh and intensely new, and deeply influenced by space, event and movement, made it possible. In The Manhattan Transcripts (1976) Tschumi reorganized those components in a way that lead to another way of thinking about architecture; whereby the focus is not on buildings but on how one acts and relates in space – in urban space. Yet, these early works did not look at the contextual dimension but at a certain abstraction, the abstraction of movement, of event, of space; thus, they were thus almost like philosophical categories. Slightly later though, he realized that the work had yet another dimension: different parts were to be layered, juxtaposed and collided, to establish a dialogue between different moments in the city that were physical, historical and functional (Eisenschmidt, 2012).

The Parc de la Villette competition offered Tschumi an opportunity to further explore and implement his theories about looking at the city through space, event and movement. Tschumi describes his design for la Villette as an encounter of three autonomous systems: events, movements and space. These systems are expressed in the park's organizing structure of points, lines and surfaces; whereby surfaces correspond to systems of space, points equal events and lines correspond to systems of movement. These elements are referred to by Tschumi as the "programmatic systems" (Tschumi, 2014).

Points: with this system, Tschumi proposes a distinction between "defining space and activating space" (Eisenschmidt, 2012, p. 133). As he explains, he wanted to create objects that activate space and generate energy – almost creating fields of magnetism; to establish an opposition to what existed around the site while adopting the

point-grid as a common denominator to all the diversity around it (Eisenschmidt, 2012). Accordingly, he proposed a system that consists of 26 red folies located at the cross points of a 120m x 120m organizational grid. As explained by Tschumi in *Cinégram Folie: Le Parc de la Villette* (1987), each folie was developed from a 10m x10m x10m cube which was deconstructed and restructured to arrive at unique forms. The program required was then distributed through these points and sparced across the whole site. According to Tschumi, follies were envisioned as "points of intensity;" points that would activate the vast park area and promote movement throughout it. These points house coffee shops, information centers, an art gallery, an infirmary, etc.; services that provide more possibilities for people to go into and stay in the park (Eisenschmidt, 2012).

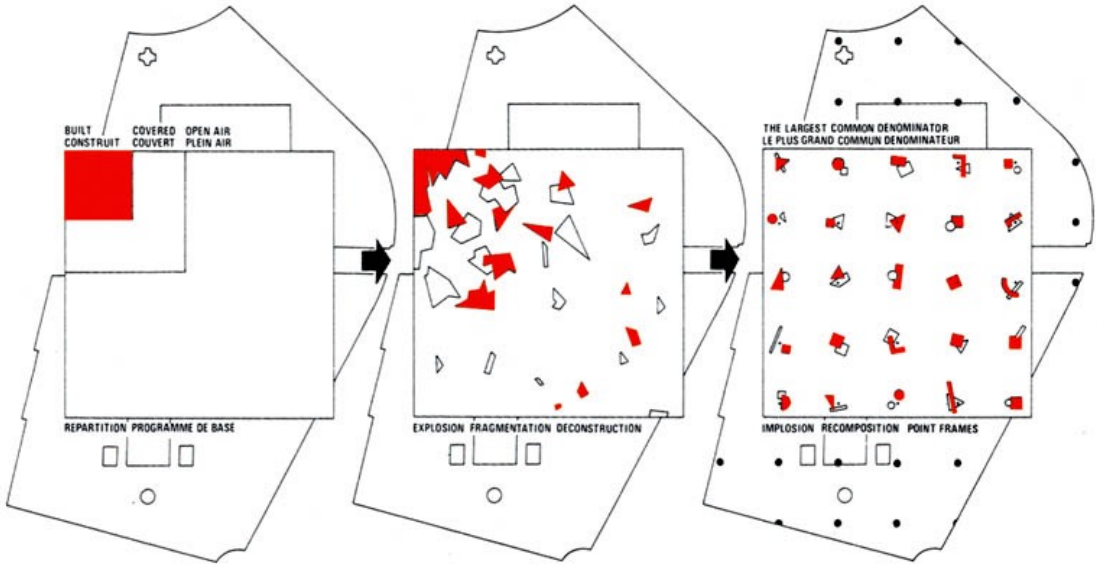

Figure 46: Programmatic deconstruction (Source: julianrich.blogspot.com).

Lines: this system consists of movement paths. These paths include two wide rectilinear trails: one that is parallel to the canal and incorporates an elevated walkway connecting the follies and another one perpendicular to it and connecting two metro stations. The system of lines also include a curvilinear path leads itself through

sequential gardens. The interaction between these paths, the folies and the sequential gardens introduces a cinematic quality into the landscape (Tschumi, 1987). “Meaning is derived through the order of experience rather than the order of structure, as one's experience is conditioned by one's movement” (McQuaid, 2002, p. 216).

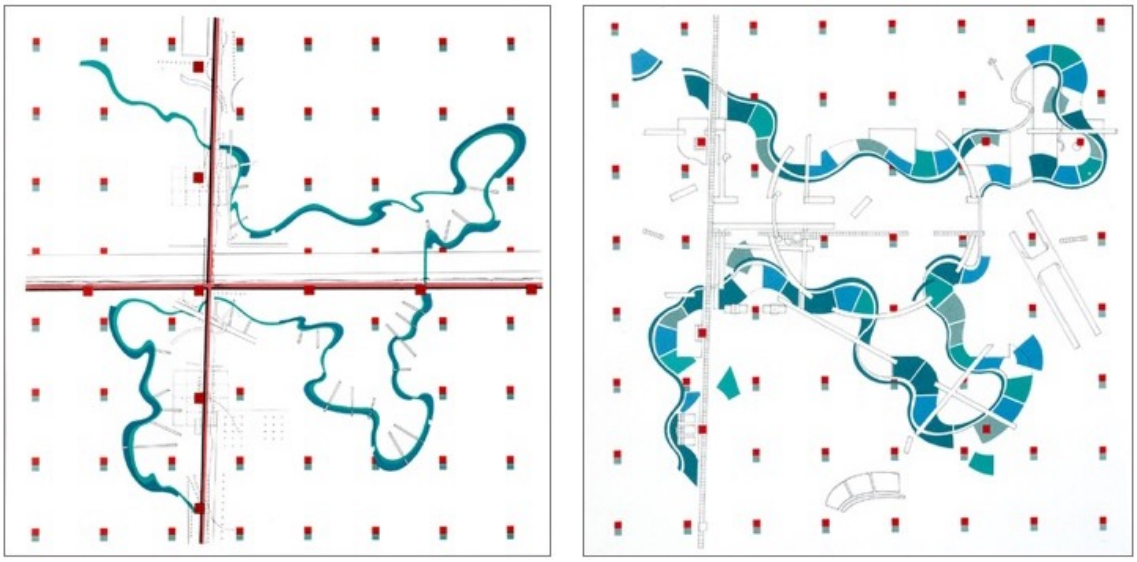

Figure 47: System of lines (Source:Frac Centre).

Surfaces: this system consists of around 350,000 squared meters of green areas; large open spaces for interaction, relaxation and large gatherings. As Tschumi explains, the surfaces of the park have no specific program; they and house all activities requiring large spaces with outmost programmatic freedom (Tschumi, 1987).

Figure 48: Green area, part of the surfaces system (Source: unkown).

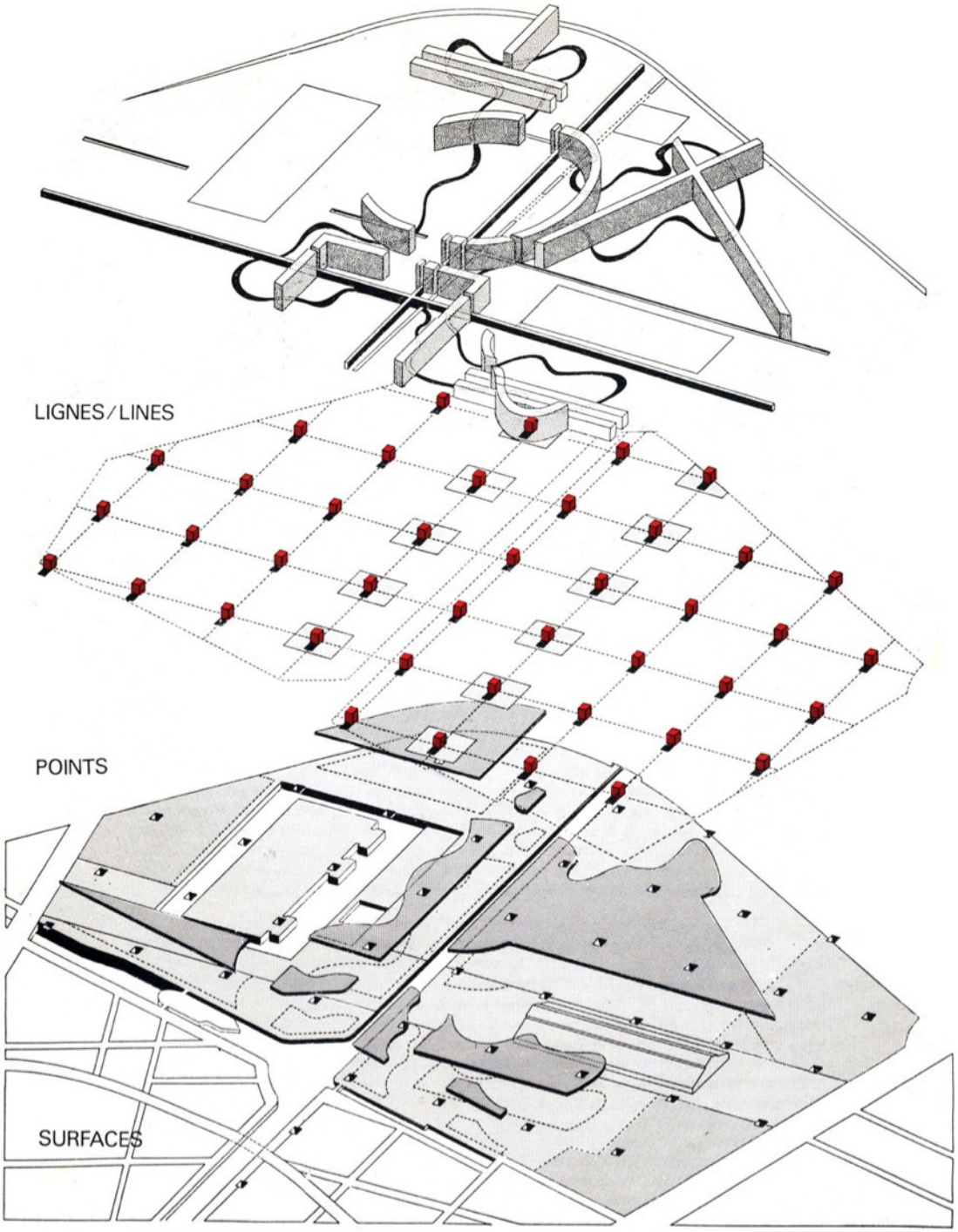

Figure 49: Superimposed system of points, lines and surfaces (Source: archdaily.com).

C. The Highway as Cultural Infrastructure

As explained above, both Architecture Urbanism and Landscape Urbanism provide analytical and synthetic methods to deal with the city in general, and infrastructure in particular, through the intersection of design disciplines. However, for the purpose of this study, infrastructure needs to be reconcptualized with reference to its **cultural potential** as a movement corridor and a connective urban structure. Accordingly, this section will discuss the highway as a hybrid cultural entity that is conceived both as a 'physcial/functional space' related to connectivity as well as a 'hertsian space' related to communication. The highway will finally be discussed as 'kinetic/aesthetic' space related to the experience of motion.

1. The physical and 'hertzian' dimension of the highway

Cultural infrastructure can be defined as the structures and networks that support cultural products, activities and experiences, either as tangible or intangible elements (De Lange & De Waal, 2008). During the Modernism period, a strong emphasis was placed on tangible cultural infrastructure - which includes built structures and physical spaces intended for artistic and cultural activities; such as museums, theatres, libraries, production centers, etc - to provide temporal and spatial mechanisms for the generation and promotion of social interaction and cultural experiences. However, today it is not possible to talk about the city's cultural infrastructure without also taking its intangible components - or non-physical entities like knowledge, technology, collective memory, images, etc.- into account. The 21st century city is thus a double entity: it is the physical, geographical city with its buildings, piazzas and highways and it is also the "hertzian space" of electronic communication, information

and images. The physical/real world of concrete, steel and glass, and the non-physical/virtual world of digital bits and information are so interrelated that their separation is no longer useful or even possible. As a result, the contemporary urban space has become a "hybrid space" created by the merging of borders between these physical and digital worlds (De Lange & De Waal, 2008). It is also a kinetic space related to preception.

Hybrid spaces, as explained by Martijn De Waal & Michiel De Lange in "the Mobile City: a conference on locative media, urban culture and identity," are "built by the connection of mobility and communication and materialized by social networks developed simultaneously in physical and digital spaces**"** (De Lange & De Waal, 2008, p. 2). Accordingly, and unlike in Modern times, the highway as cultural infrastructure does not only support the flow of cars, goods and people, but also of signs and information.

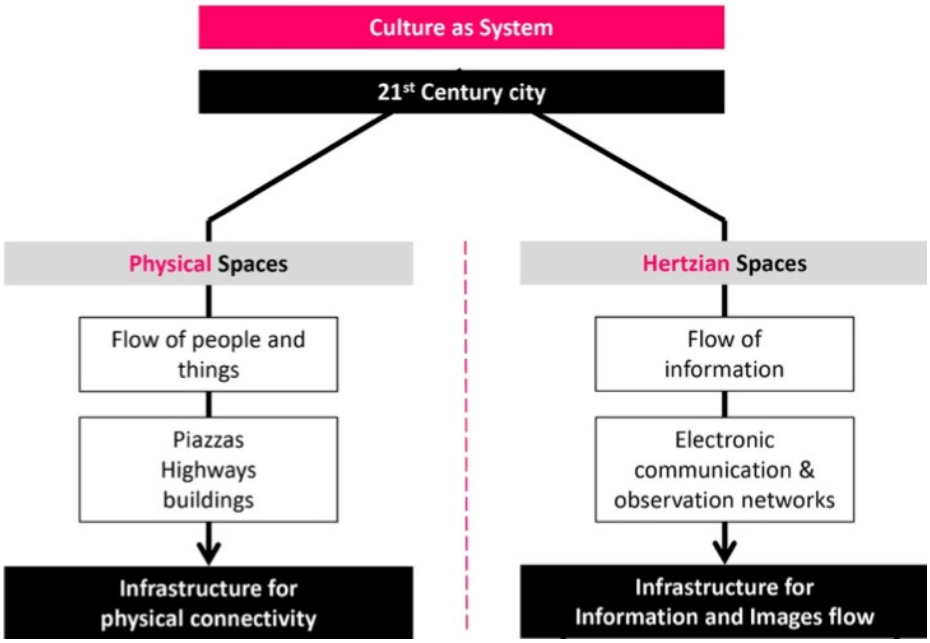

Figure 50: Culture and cultural infrastructure in the 21st century.

The highway as cultural infrastructure is no longer conceived as a purely functional element but as one with a new and enlarged role: to be a primary support of social interaction, art, politics, entertainment, and aesthetics. It thus "becomes an object of design as much as it becomes the primary condition of the design of the city" (Delalex, 2006, p. 212), not only designed to look better but also to act as a reflexive tool that adapts to its cultural and aesthetic content, affects the identity of the place to which it belongs while emphasizing the aesthetic character of the urban space.

The highway as cultural infrastructure is no longer a homogenous space with no identity; signs and places are arranged along it to create a new system of reference. The recurrence of these signs and places **"**allows for a new kind of identity which is not based on the singularity of places, but on their repetition" (Delalex, 2006, p. 103). It can be compared to a piece of music, whose notes do not exist to accomplish a particular function but "to reveal a certain attitude… to display, to show, to demonstrate, to attract and to seduce" (Delalex, 2006, p. 214). The highway as cultural infrastructure becomes an aesthetic vessel that displays the image that the city creates of itself. Yet, since this image tends to change with time, the infrastructure is to be designed as a flexible framework that provides the urban space with the plasticity and modelability of art and design (Delalex, 2006, p. 214).

While the highway exists as a static and bulky object in the landscape, it also has a strong dynamic impression on the driver and his/her passengers. Thus, the reconceptualization of the highway as a cultural infrastructure should not only address the highway's physical form but also the kinesthetic experience of its users.

2. The perceptual dimension of the highway

The highway as cultural infrastructure is a piece of art where vision and touch are, respectively, the principal a secondary senses involved. The sensation of driving a car is primary one of motion, space and orientation where the spatial sequence is similar to that of large-scale architecture and the continuity and rhythm are similar to music and cinema. Yet, unlike music and cinema, the driving sequence is reversible and interruptible. Since people may cross the highway in either direction, the sequence should be enjoyed when played backward as well as forward. Moreover, users will not necessarily watch the sequence from beginning to end as many will enter and leave the highway at intermediate points (Appleyard, Lynch, & Myer, 1964). The highway experience can thus be described as "a sequence played to the eyes of a captive, somewhat fearful, but partially inattentive audience, whose vision is filtered and directed forward. It is a sequence that must be long, yet reversible and interruptible" (Appleyard, Lynch, & Myer, 1964, p. 4).

Finally, as explained by Appleyard, Lynch, and Myer (1964) in "the Vew from the Road," the essential experience of the highway consists of:

- The apparent meaning of the landscape.
- The perception of roadside details such as lights, signs, paving texture, etc.
- The perception of motion, which includes the apparent self-motion (speed, direction, and their changes) and the apparent motion of the visual field (passing alongside, underneath, rotation, translation, etc.).
- The sense of space, which depends on the presence of enclosing objects or surfaces, the proportions of the spaces enclosed, the intensity and direction of the light

that make the space apparent, the relationship of spaces in sequence (jointing or overlapping), and the direction of the principal views (which draw the eye towards different aspects of the spatial enclosure.

- The sense of orientation, which deals with the general mental image of the highway and the landscape. This image develops partly as a result of what is presently visible and partly as a result of past experiences. As in "the image of the city," the image of the highway consists of paths, nodes, districts, edges and landmarks. Paths are the lines along which the user feels he/she can move (i.e. canals, walkways, etc.). Nodes are focal points into which the user thinks he/she can enter (i.e. intersections, terminals, etc.). Districts are the areas imagined as being relatively homogenous and identifiable (i.e. neighborhoods, office districts, etc.). Edges are the lines perceived as barriers or boundaries (i.e. walls, edges of developments, riverbanks, etc.). landmarks are points used for reference but to which the user do not usually enter (i.e. monuments, sign, etc.). The highway itself is a path that goes through nodes, edges, districts and passes by landmarks. It is an image element a sequence made up of other image elements.

3. Case study 3, Boston's central artery

To provide a concrete illustration of the highway as a work of art and of the design methods addressing the visual and aesthetic experience of those driving on it, a hypothetical design for the Boston Central Artery, an inner-ring road encircling central Boston and coming tangentially to the central city district, will be here discussed. As presented by Appleyard, Lynch, and Myer (1964) in "The View from the Road," the proposed hypothetical design aims at re-envisioning the city image and to orient drivers

to it. This hypothetical design was kick-started with two main maps: the map of structure of Boston and the existing image of Boston.

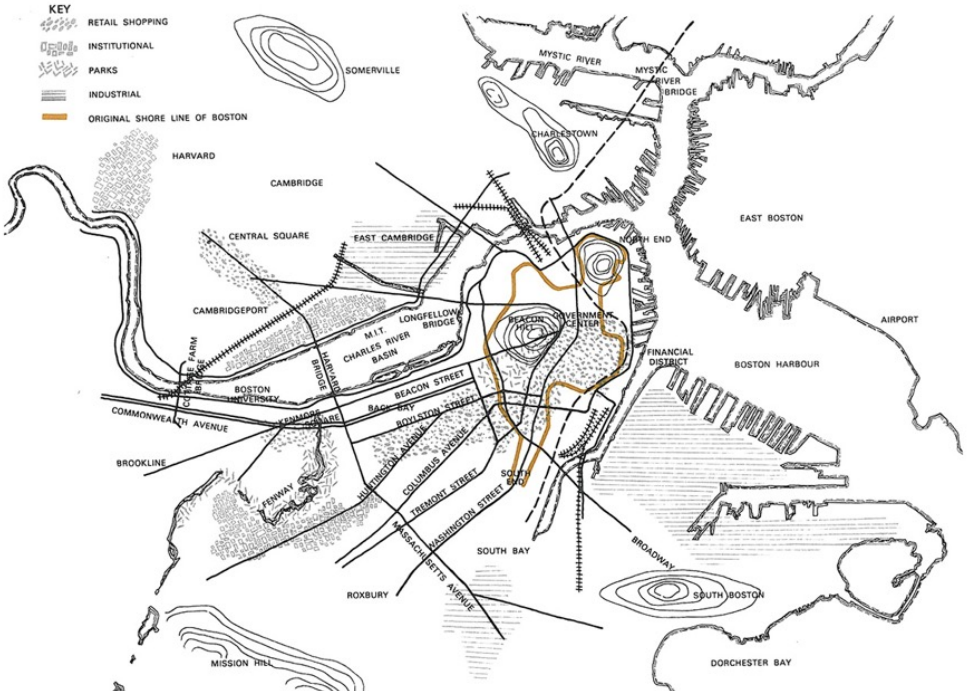

Figure 51: Boston's map of structure (Source: The View from the Road).

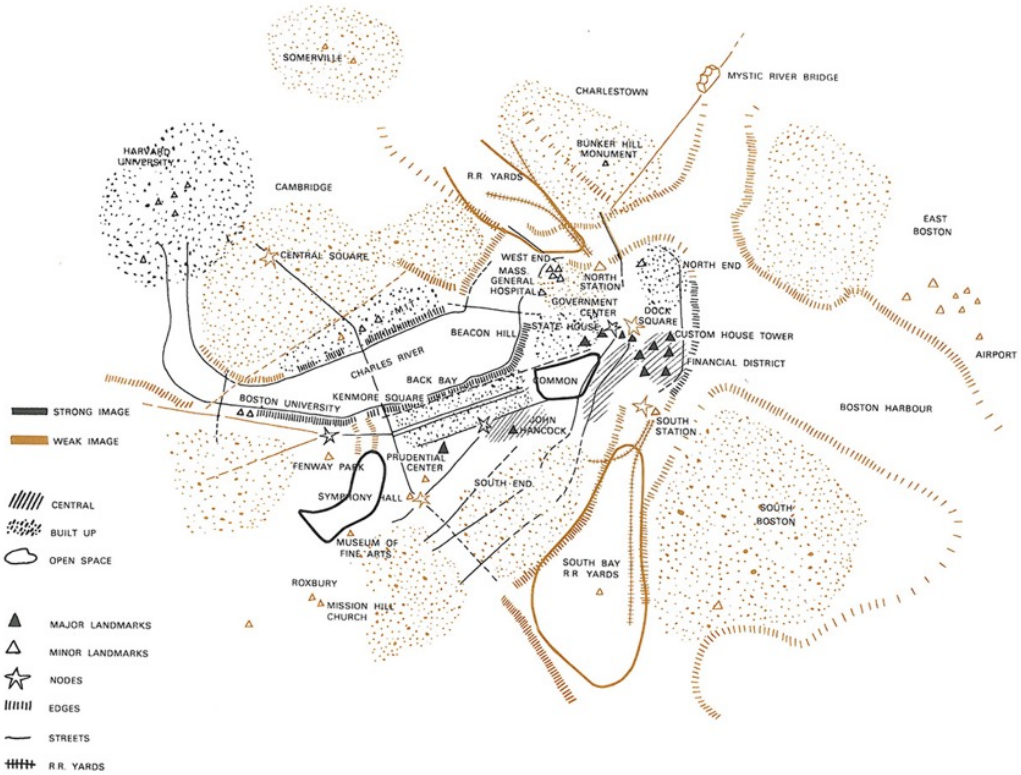

Figure 52: Existing image of Boston (Source: The View from the Road).

From the information provided by these maps, the most significant weaknesses and potentialities of the city image were deduced. The weaknesses include: a) the confusing location and visual continuity of the two main water bodies in the city, b) the invisibility of certain parts of the central city from the official expressway route, c) the visual disconnection of the loosely clustered cultural center from the rest of the city, d) the inner-ring "grayness" (easily recognizable central core, featureless and unrecognizable surroundings), e) the fading of the city image in the south side of the peninsula. On the other hand, the detected potentialities include the presence of: a) large open spaces, b) surrounding hills that indicate specific locales (and which could be well appreciated if the road were built high enough to look over the rooftops), and c) a downtown district with various clusters of landmarks that are quite different in character. (Appleyard, Lynch, & Myer, 1964).

Building on these weaknesses and potentialities, the following changes were proposed:

- **Sense of orientation:** Circular roads present difficult problems in orientation as radials enter them at many points making them troubling to be hold in mind. In the proposed hypothetical design for the Boston Central Artery, such problem is solved by gathering all radials together at three key points on the ring road. As a result, the ring road becomes a triangle rather than a circle, with a large three-way intersection at each apex. Decision making is thus facilitated as the driver would now choose one out of three exits instead of choosing one out of six.

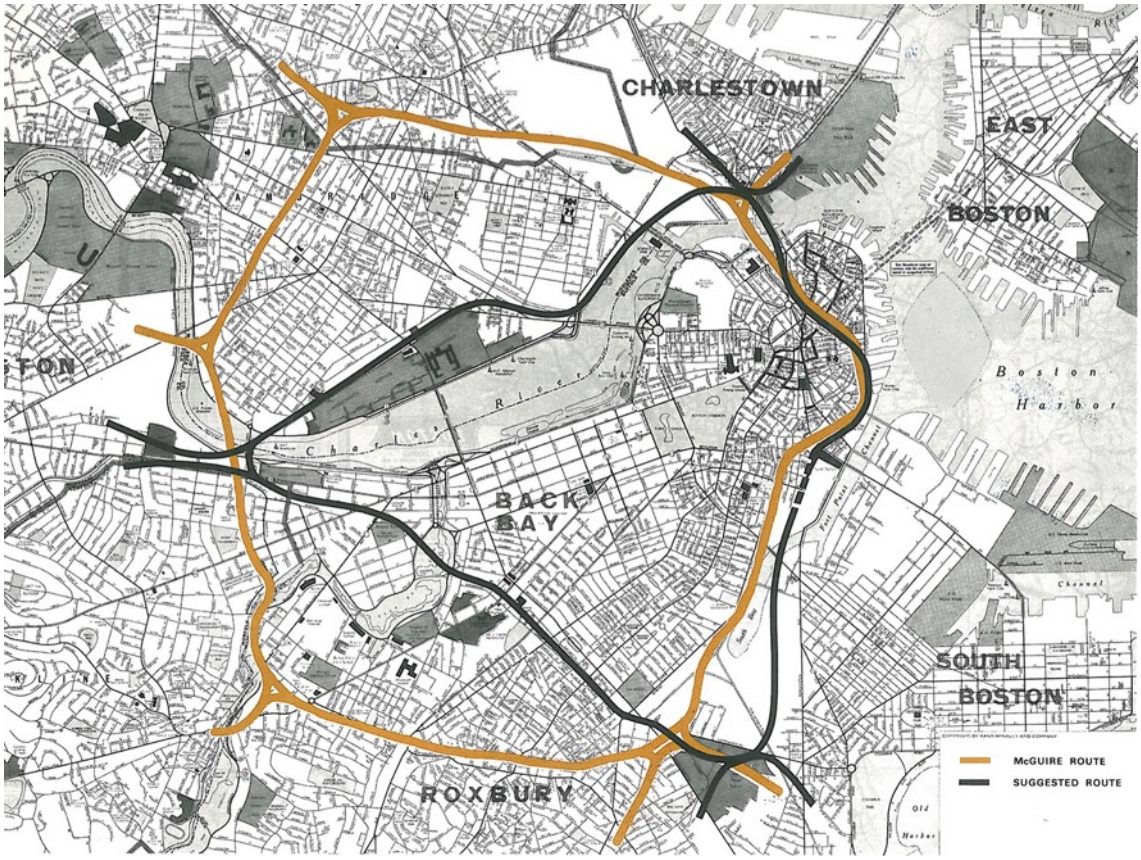

Figure 53: Comparison of proposed route with official route (Source: The View from the Road).

Moreover, the proposed ring road is related to the city at several points so that the driver is always approaching an easily recognizable goal. The relation between these points, or individual landmarks, is maintained by general views and overlapping shots. Also, the detailed bearings of the road have been chosen so that drivers can separate and identify different groups of landmarks in the central area as well as in the area outside the ring-road. That way, drivers can locate themselves when approaching and/or getting out of the site (Appleyard, Lynch, & Myer, 1964).

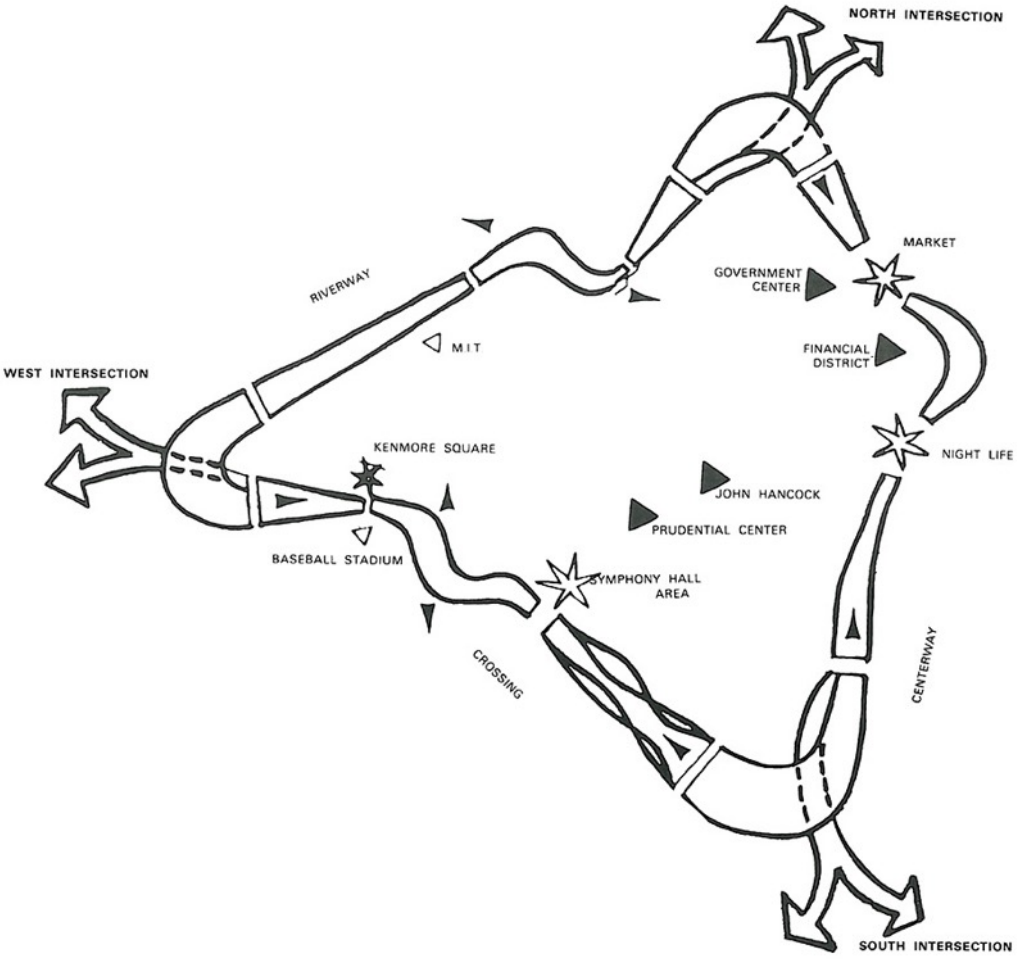

Figure 54: Structure of trip (Source: The View from the Road).

- **Sense of space and motion:** As illustrated in the below diagrams, there is a unique aspect defining each of the ring-road's thee legs; the kink of the River-way, the bulge of the Centerway and the close confinement of the Crossing. Such space-motion combinations tend to direct the eye; and, when the intended views are linked up to sections of the road, a more complete idea of the experience is given - especially since views are seldom seen a specific points but can be seen over a certain stretch of the road (Appleyard, Lynch, & Myer, 1964, p. 47). In these diagrams, we also see the spaces and the character of the confining walls, the relation of the road to natural features such as

the river and the hills, and the character of the districts that are being passed by. Moreover, figure at the left shows the relation between movement and time and the basic rhythm of recurring intersections.

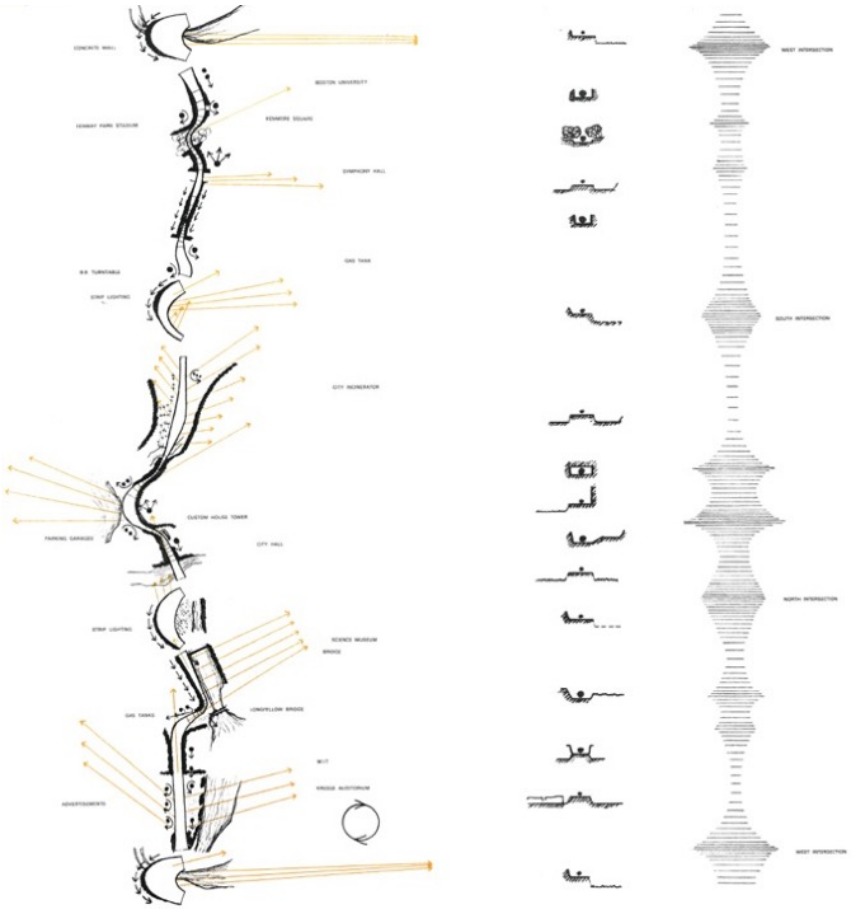

Figure 55: Space-Motion-Time, clockwise travel (Source: The View from the Road).

Moreover, the diagrams below show the separateness of the experiences resulting from the clockwise and anticlockwise movements. In both trajectories, the same objects may be seen but from a different direction and; therefore, they will look different and relate differently to other landmarks.

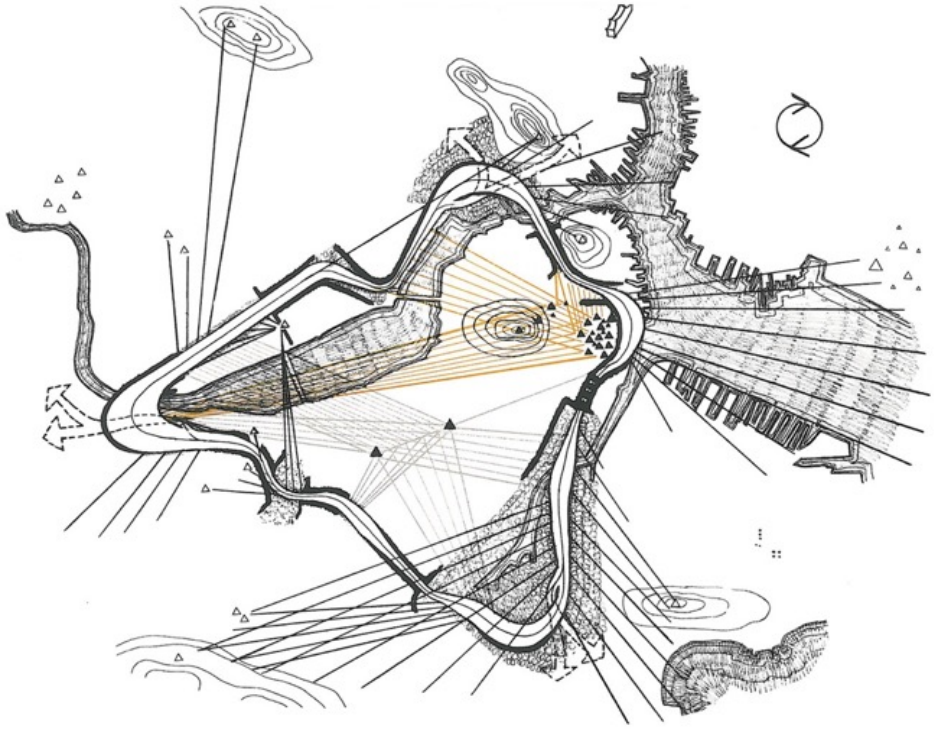

Figure 56: Space-Motion and View diagram, clockwise travel (Source: The View from the Road).

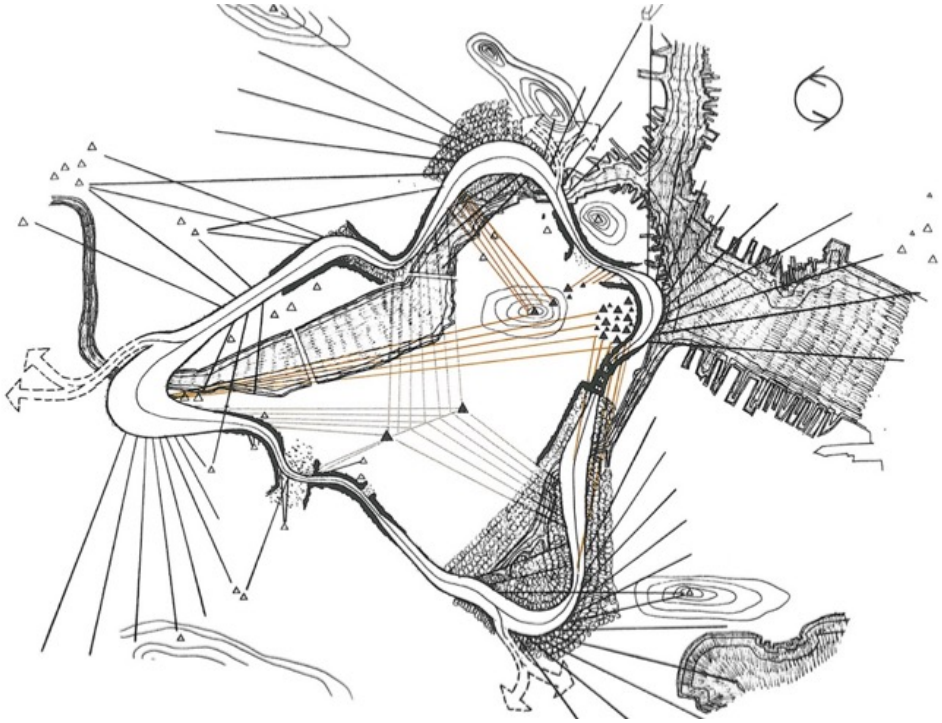

Figure 57: Space-Motion and View diagram, counterclockwise travel (Source: The View from the Road).

- **Perception of roadside details:** road details are used to emphasize and direct the driver's view. The following details are highlighted by Appleyard, Lynch, and Myer (1964):
  - Huge lamps to be used to lit huge curves at night.
  - Each leg of the road to be surfaced in a different color and/or texture so that the drivers instantly know which leg they are on. Color coded stripes to direct the drivers to their chosen routes at intersections.
  - Downtown climax to be built up by advertising signs at selected places as well as by parking towers. The signs along the Riverway approach to advertise hotels and events taking place in Boston. On the way out, signs to advertise travel outside Boston as well as nationwide industries.
  - At the market area, where the road descends to a lower level than the surrounding streets, an amphitheater-like space is built up so that people can sit and look at the cars and vice versa. In ceremonial days, the space could be used as a grandstand for parades occurring at the highway. Moreover, grotto restaurants are proposed to act as a nighttime compliment to the market climax.
  - The sight of people to be an important characteristic of the nodes.
  - The financial district to act as a solid internal wall, the external view of the harbor to be framed by high parking towers, and a giant water spout, similar to the one at Geneva, to be place across the harbor.
  - When the road descends and passes by the residential area, street art elements and signs might be used to depict some characteristics of the area.
  - The Symphony Hall area to be opened by pulling down some buildings to form a plaza.

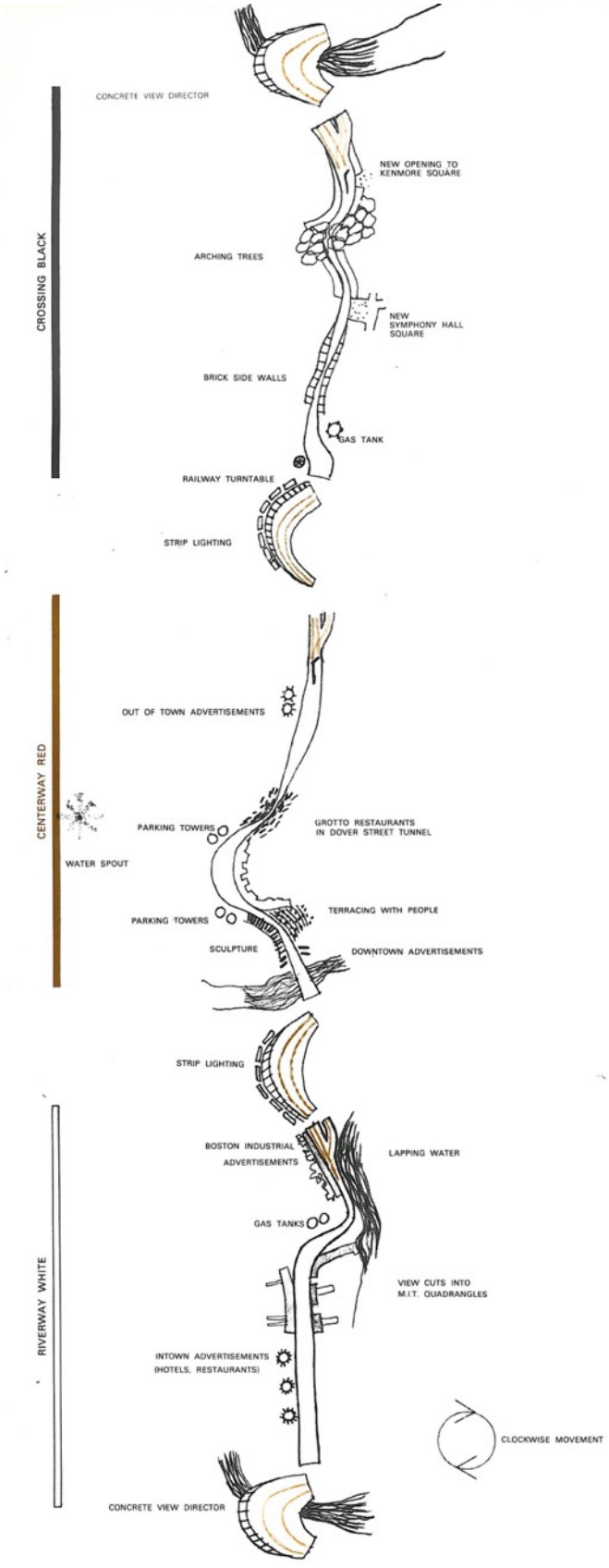

Figure 58: Road detail, signs and pavement (Source: The View from the Road).

At night, many details will disappear into the dark to be replaced by luminous dots, strips and defused lights. In this hypothetical design, the proposed lighting strategy tries to clarify and emphasize the daytime pattern of the city. Accordingly: a) the principal daytime landmarks and reference points are lit up, b) different lighting colors are used to relate to the different methods of transportation (i.e. blue for the airport, green and red for the railroad yards), c) the entertainment district is lit up to become a nocturnal landmark seem from the outside, and d) the reflectivity of the water is utilized by the continuous lighting down of both sides of the river (Appleyard, Lynch, & Myer, 1964).

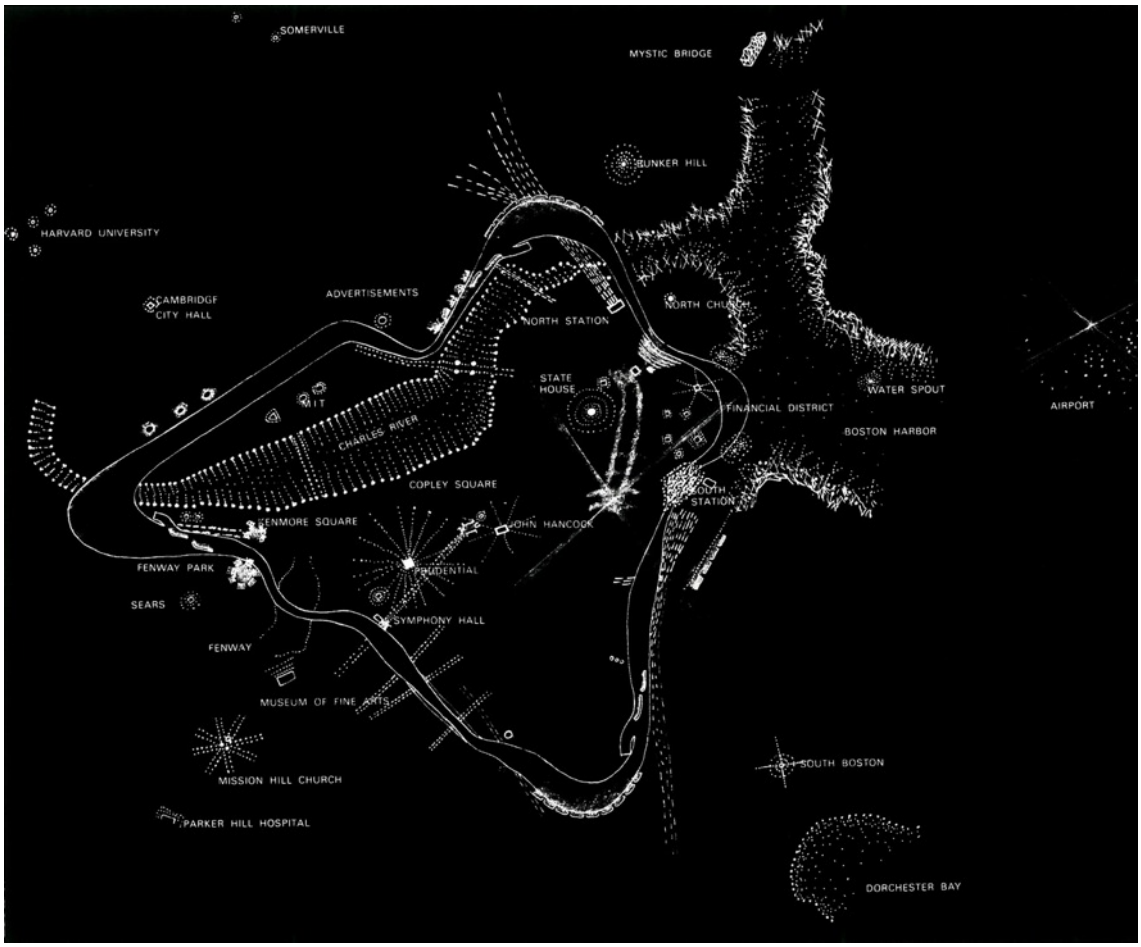

Figure 59: Night diagram (Source: The View from the Road).

D. Lessons Learned

1. Contingency: programmatic uncertainty and the continuity of the urban surface

Contingency is "a characteristic which takes into account not only the complexity within certain perceivable systems, material or social, natural or cultural, but also the arbitrariness in what systems and phenomenon are actual within certain time and space" (Paul, 2011, p. 51). To conceive infrastructures through the operative lens of contingency is to translate the site and the opposing dualities it might contain into a "smooth space" (Paul, 2011, p. 51). It is to foresee a strategy for urban development according to which the empty space connects the built-up structures in a whole thus providing constantly open opportunities for new arrangements. The whole is built up from an infinite number of situations of the same kind, or modules, which repeat themselves through different measures of space by combining smaller patterns into a larger one.

Programs provide projects with an organizational logic. Yet, due to the rapid urbanization and constant changes taking place in contemporary cities, projects should be strategically designed to house changing programs, unanticipated uses as well as to give citizens the opportunity to create their own scenarios.

The case of Parc de la Villette sheds light on the difficulty of dealing with ambiguous sites and ambitious and uncertain programs. The problem presented by La Villette was less one of design in terms of styling identity and formal composition, and much more one of strategic organization. The site had thus to be organized and equipped in a way that allowed for the accommodation of any number of changing

demands and programs. Rather than a fixed design, the project offered the city a structure for developing flexible uses as its needs and desires changed. The proposed systems of surfaces, lines and points were designed to be both responsive and adaptive. The action of superimposing one system over the other allowed for quantitative changes without loss of organizational structure (Wall, 1999).

Similar to Parc de la Villette, Fadi Mansour's proposal for Beirut's Green Line is first a tactical strategy that, though originally designed to be filled with university and public programs, anticipates the uncertainties of future development. The proposed unifying system of repetitive modules articulates the void of the Green Line as a "contingent" infrastructural system that provides morphological continuity and is open for changing programmatic arrangements.

Accordingly, whether the initial design proposal for the southern edge of Beirut Central District is re-envisioned as a system of superimposed layers (i.e. Tschumi's design for Parc de la Villette) or as a smooth structural continuity (i.e. Fadi Mansour's proposal for the Green Line), it is important that it is guided not so much by aesthetics but by its possible instigative and structuring potential. It is also essential that the site is equipped with services and furnishing that can be appropriated and modified by the public to enable a diverse and flexible range of uses.

2. Malleability of architectural types

"Architectural types can be generic enough to overcome differences and specific enough to engage and index the cultural, social and political nuances of its host" (Christopher C. M. Lee, Dominant Types and the Idea of the City).

Architecture can contribute significantly in the field of urban design if, instead of using architectural types as fixed and standardized products of city creation, they are considered as an "operative theory" for generating organizational parameters for the development of sites over time. Yet, for architecture's contribution to be effective in this field, building types must be analyzed and modified to propose design interventions that respond to the hybridity, diversity and patchwork nature of the city.

Typal reasoning calls for the analysis of a city's "dominant types" or "elements of permanence," such as landmarks and civic spaces, which act as repositories of the city's history and express its identity, culture, and raison d'être. To understand such types is to understand the city itself and to propose interventions that are relevant to the city and enhance its citizens' sense of belonging. On the other hand, typological reasoning, the diagrammatic and analytical resolution of formal models, involves the consideration of existing models to translate the generic into specific practice–driven and structural solutions (Lee & Jacoby, 2011).

As an example, we see how the project by Fadi Mansour originates from the study of two dominant types of public realms that challenge conventions: the Green Line as a void and the AUB as a gated enclave. Mansour's reconceptualization of the meaning of the public and public spaces in Beirut is founded on an understanding of the symbolic and physical importance of the Green Line and AUB's role in providing and maintaining a (privatized) public and neutral void in the city. This typal reasoning (a primarily conceptual and systematic thinking) is followed by a typological reasoning (a diagrammatic and analytical resolution of formal models) revolving around mat–buildings in general and Le Corbusier's Venice Hospital in particular. The basic unit

proposed by Le Corbusier is modified to create a building system that covers an entire city quarter and meets the re-envisioned situation of the Green Line (Jacoby, 2015).

It is only by adopting such an understanding of type and typology that architects are able to project unbounded, site specific models capable of integrating differences into coherent systems. In the case of the initial design proposal for Fouad Chehab's infrastructural break, the folded structure is influenced by the projected dominant type of Dar Beirut. However, the reached design is more of a fixed architectural solution than a flexible building system. Thus, there is a need to re-question the fold as a system (made of clearly defined parameters that can be used flexibly over the site) and not fixed architectural solutions.

3. Ecology

Landscape urbanism highlights the importance of analyzing the city through the lens of ecology in order to conceptualize more fluid and alternative urban solutions. As explained by Corner (2003), ecology teaches us that all life on the planet is deeply bound into dynamic relationships and that the interaction between elements of ecological systems is too complex to be described by linear, mechanic models. Moreover, ecology suggests that individual agents acting within an environment produce cumulative effects that change its shape over time and that; accordingly, a particular spatial form is merely a state of matter, on its way to becoming something else (Corner, 2006).

To use the metaphor of ecology is neither to address an environment of "nature" exclusive to the city nor to deal with the natural systems (hydrology, air-flow,

vegetation, etc.) within it; it is to understand that natural, cultural, social, economic and political environments are all part of a continuous network of inter-relationships. To view the city through the lens of ecology is thus to understand that the city itself is part of interconnected dynamic systems, processes and flows (of program, goods, energy and people as well as the purely biotic flows), where a change at one point within it influences the entire system (Corner, 2006).

In a general sense, a system can be viewed as "a set of elements in a particular state, connected by relationships that are closer than those within their environment, by being coherently organized around a common purpose" (Naveh, 2000, p. 11). The structure of the system is the set of relations among these elements. And, similar to the way an organism's parts are internally related to each other by the general state of the whole (Naveh, 2000), due to these relations, the system is always more than the sum of its elements. Moreover, at the same time, each system is both "a self-contained whole to its subordinated subsystems and a dependent part of its supersystem" (Naveh, 2000, p. 12).

In the particular case of Tschumi's design for Parc de La Villette, the common purpose according to which the project's elements and structures are organized is culture. Each of the three organizational structures (of points, lines and surfaces) is autonomous, coherent and, though abstract in conception, articulates a specific sets of uses. Moreover, their superimposition creates a larger system of relations between objects, events and people: a "supersystem" (Kaye, 2005). Tschumi's Parc de la Villette has no fixed form because, when one system is superimposed on another, the built form becomes subject to its future performance. It is in this context that Tschumi's La Villette can be compared to the contemporary city and it many parts, "which, by

analogy, might be made to correspond to the disassociated elements of schizophrenia" (Kaye, 2005, p. 282).

Following this logic of interdependency and transformation, the initial design proposal for the southern edge of Beirut Central District should be reviewed to formulate a coherent system, an organizational logic that facilitates cultural flow and by which the individual's relationship with the built and found material environment is understood, realized and reproduced.

4. The highway as cultural infrastructure

The lessons discussed above are core disciplinary knowledge from Architectural Urbanism and Landscape Urbanism. Though their general relation to infrastructural structures and landscapes has been highlighted and extensively discussed, there is the need to illustrate how they relate to culture in general and cultural infrastructure in particular. In an attempt to illustrate this relation, these three lessons, the different organizational systems extracted from the relevant case studies, and the core lessons learned from the section about culture and the highway, have been synthesized as follows:

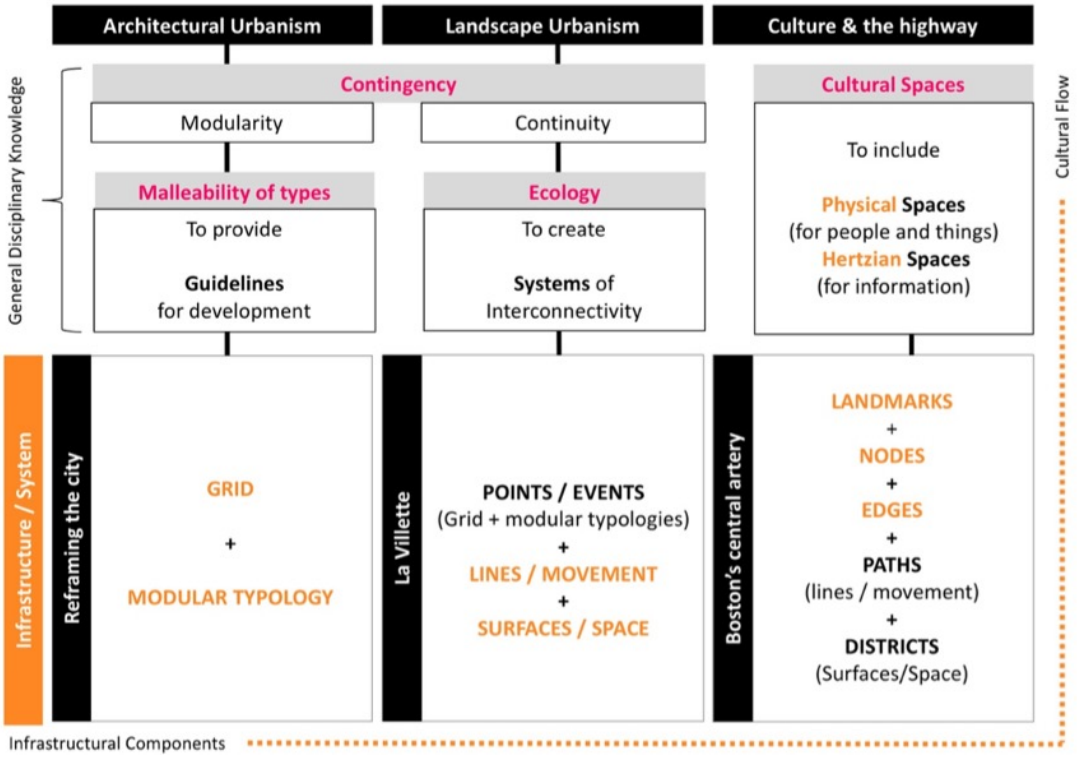

Figure 60: Lessons learned and their relation to culture and the highway

Based on this synthesis, the following system of cultural infrastructural elements and spaces is extracted as a guide on how to enhance the legibility of the Fouad Chehab highway as cultural infrastructure and facilitate cultural flow along and across the it.

Cultural	Physical Spaces	Hertzian Spaces
Infrastructural Element	**Interaction**	**Information**
Points: Modular typologies + flexible program	Folding typologies, heritage buildings	Signs
Paths: Lines of movement	Vehicular roads, pedestrian streets, Wi-Fi	
Surfaces: districts, relatively homogeneous areas	Area dedicated to Culture	facades, screens
Edges: lines perceived as boundaries	Airport and Damascus roads	
Nodes: intersection points	Highway intersection with Airport and Damascus roads	
Landmarks: Reference points		Structures visible from the highway

Figure 61: Elements of the highway as cultural infrastructure

CHAPTER IV

REVISITED URBAN DESIGN INTERVENTION

In this chapter, the initial design proposal is revisited based on the lessons and strategies discussed in the literature review. The starting point for this revision are the lessons learned on ecology and on the highway as cultural infrastructure. As illustrated in the previous chapter, the concept of ecology highlights that the different components of the design should not be considered as individual objects but as parts of a system. And, since the main objective of our design is to reinforce the cultural identity of the highway, this system, or the common purpose according to which the project's elements and structures are organized, is culture.

Since culture has tangible and intangible components, an infrastructural system aimed at promoting the flow of people, things and information should consist of spatial and informational infrastructure. The initial design proposal was, however, focused on providing infrastructure for physical connectivity only; thus, it is herein reviewed to incorporate infrastructure for the flow of information and images.

The revision of the initial design is guided by a synthesis of the elements of cultural infrastructure systems, the elements of identity, as well as the lessons learned on contingency and malleability of architectural types. This synthesis is summarized in the below table (Fig. 62), which also illustrates how the revisited design consists of three different but interconnected design strategies: functional, spatial and visual.

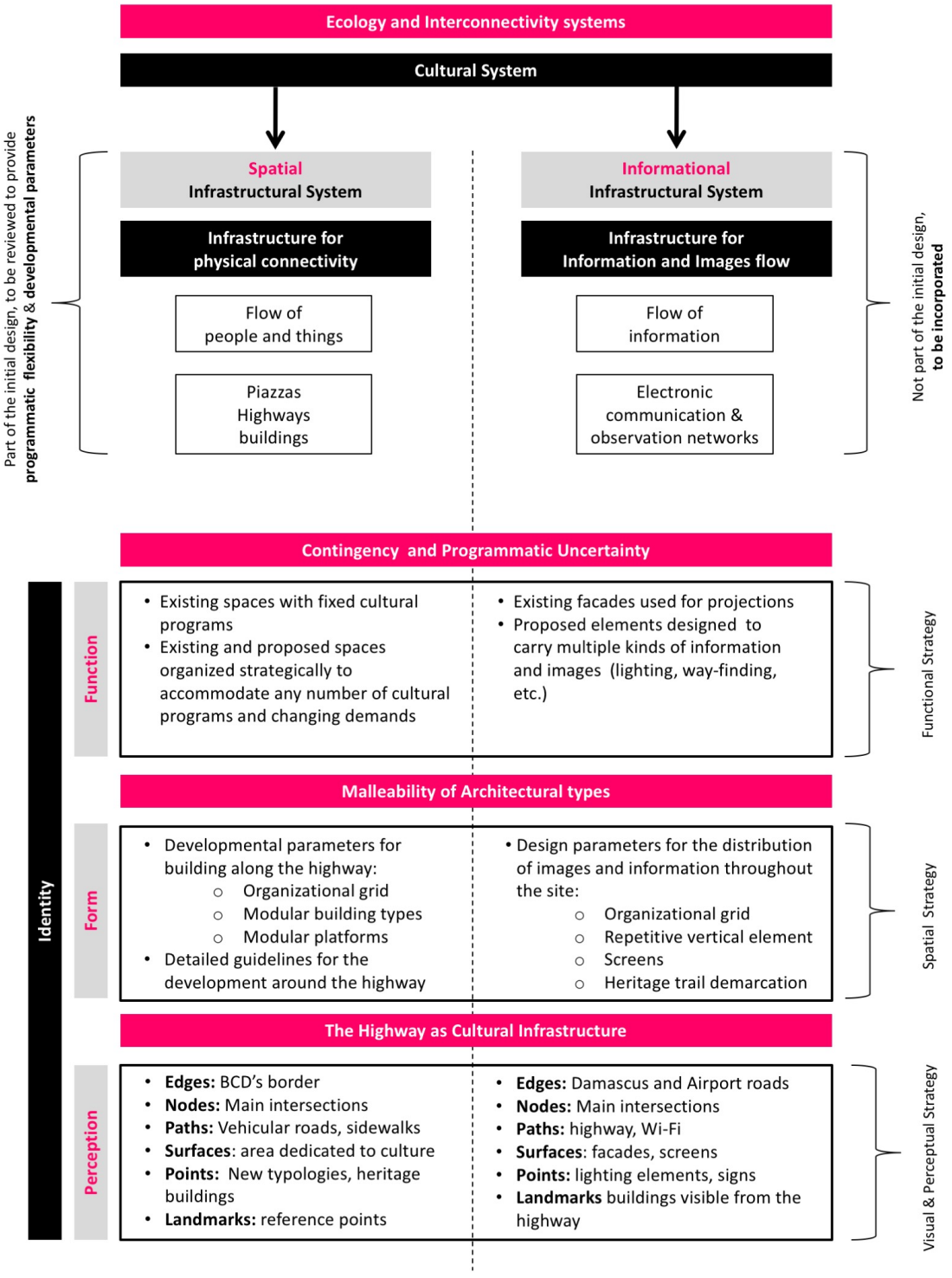

Figure 62: Elements of the proposed cultural system and relevant design strategies

Though the spatial and functional strategies were part of the initial design, they are reviewed based on two main concepts learned from the literature review: contingency and the malleability of architectural types. Accordingly, the updated design: a) is informed by existing building types as well as from the previously proposed built forms to create a set of organizational parameters for the development of the site over time and b) allows for programmatic flexibility.

A. Visual and Perceptual Strategy

As previously explained, the highway as cultural infrastructure develops simultaneously in physical and digital planes. It is a space where mobility and communication intersect to create a primary support of socio-cultural interaction and to emphasize the cultural identity and aesthetic character of the site. The purpose of the visual and perceptual strategy for BCD's southern edge is thus to support the flow of signs and information through the Fouad Chehab highway and reinforce the cultural identity of the area surrounding it. It also aims at improving the kinesthetic experience of its users. The proposed informational infrastructural system consists of signs, lights, screens and landmark cultural spaces arranged along the highway, highlighting its cultural identity and creating a new system of reference. Moreover, since many of the built and open spaces forming part of the project's cultural ecology are not visible from the highway and its surrounding neighborhoods, the projection of real time images and information from these spaces on the screens and signs along the highway is suggested as a way to share information throughout the site and and enhance social interactivity.

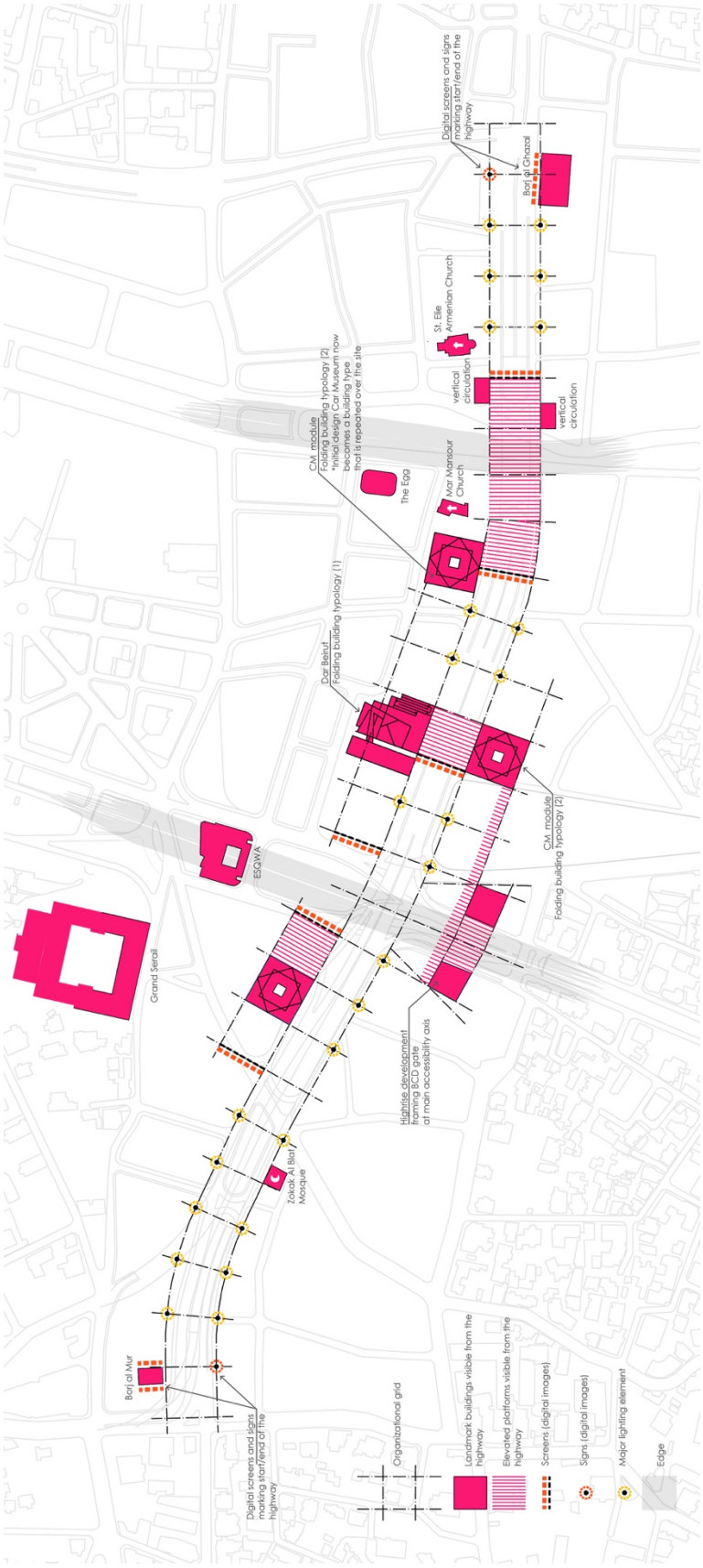

Figure 63: Overall visual and perceptual strategy for the highway

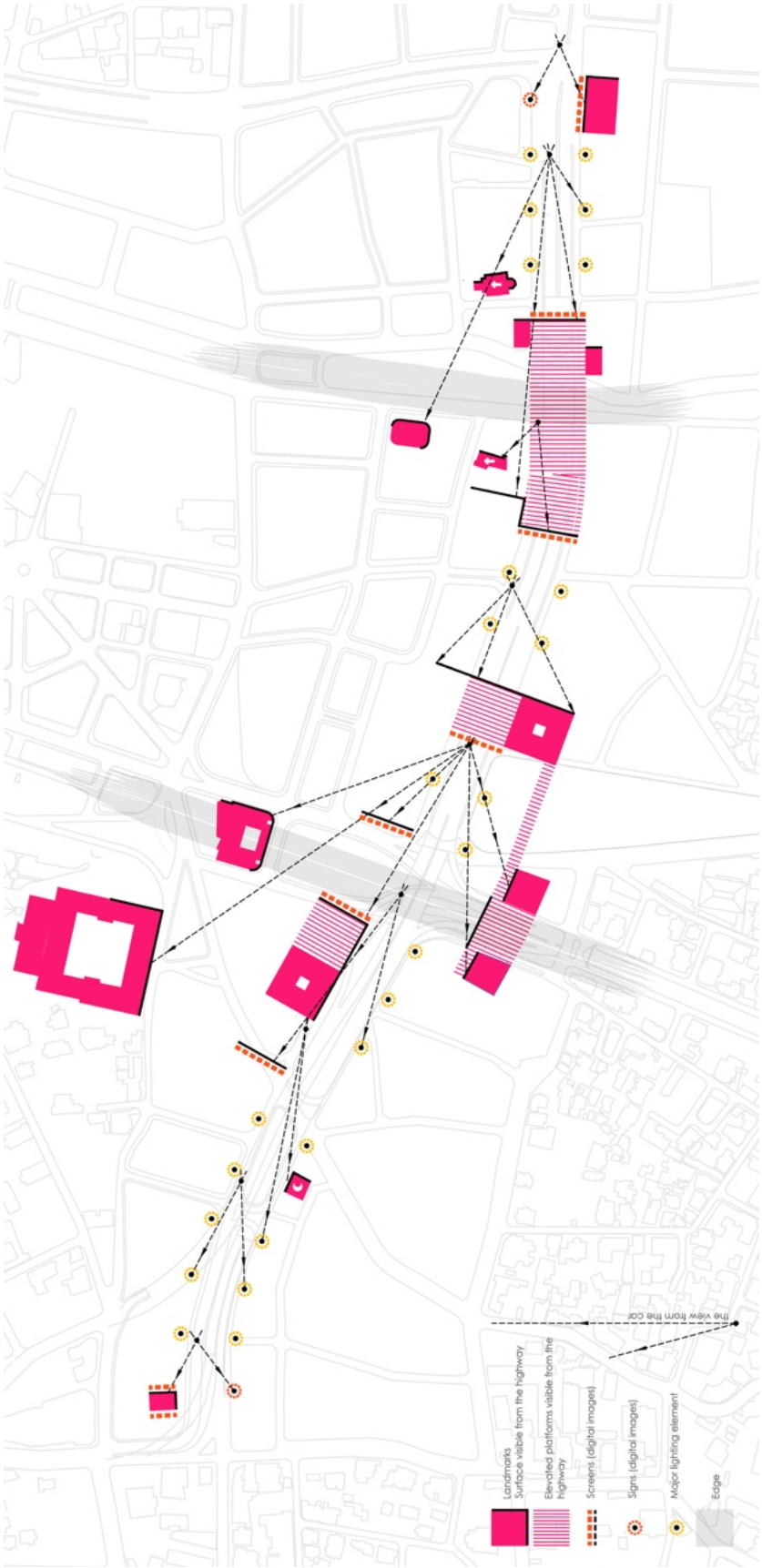

Figure 64: The view from the highway, East-West sequence

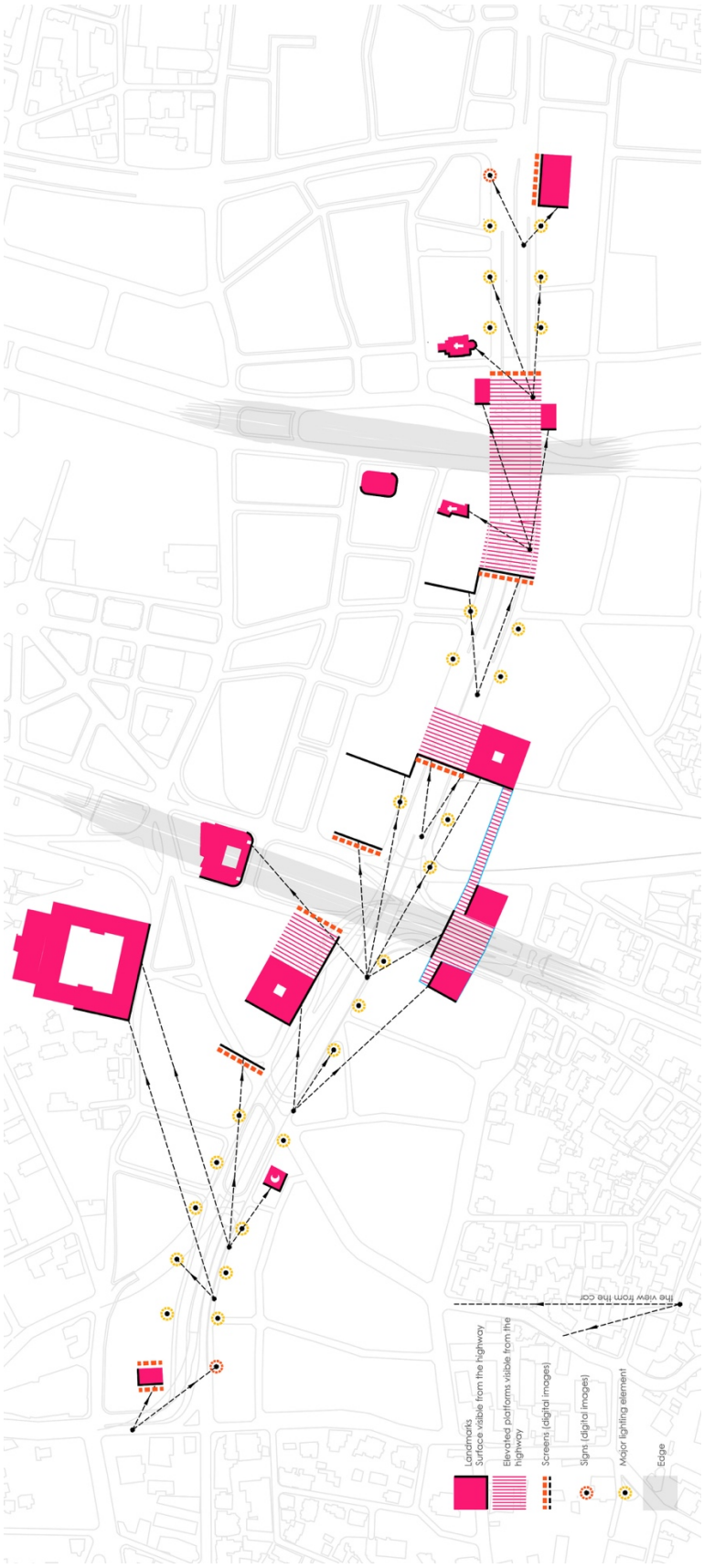

Figure 65: The view from the highway, West-East sequence

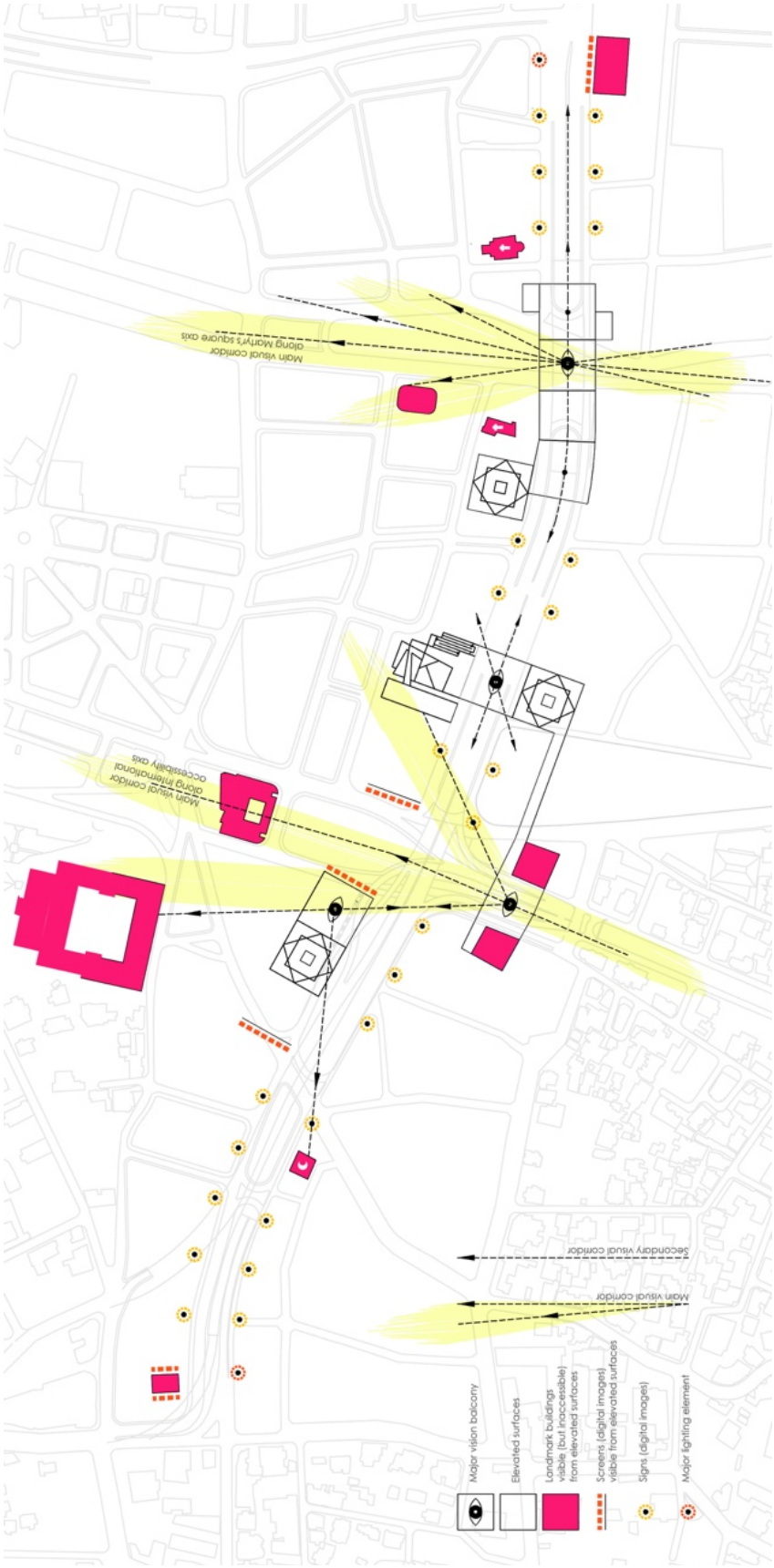

Figure 66: The view from elevated platforms along the highway (pedestrian use)

As shown in the above images, this strategy does not only address the highway's cultural identity but also the experience of its users. Since the driving sequence is reversible and interruptible, it is designed to be enjoyed when played backward as well as forward (Fig. 64 and 65). Moreover, platforms above the highway allow pedestrian users to enjoy the sight of main visual corridors as well as an overall view of the site and its informational system (Fig. 66).

The second part of this strategy aims at enhancing the cultural identity of the whole site, an objective retained from the initial design proposal. However, it is reviewed to incorporate the visual and perceptual strategy adopted for the highway. Following the findings from the literature review (Fig.61), the cultural perception of the site is expressed in its structure of edges, nodes, lines, surfaces, points and landmarks.

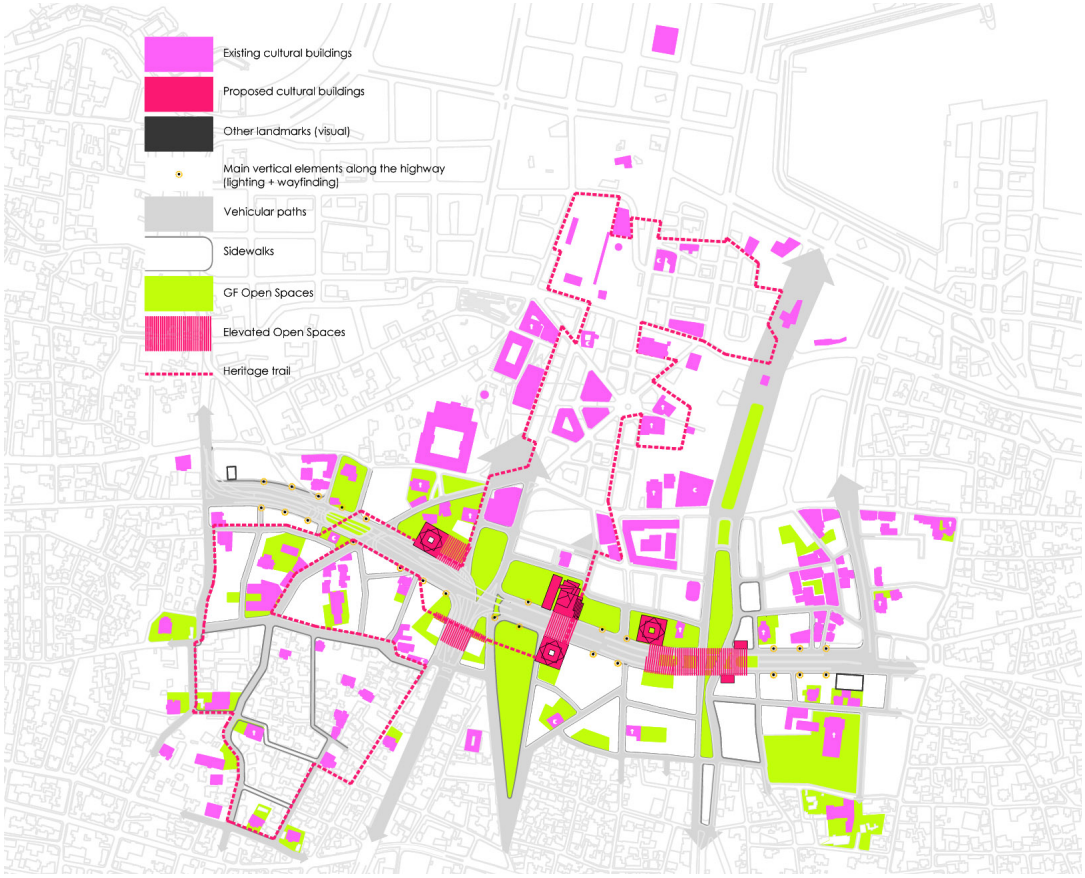

Figure 67: Visual and perceptual strategy for the complete site

- Edges:

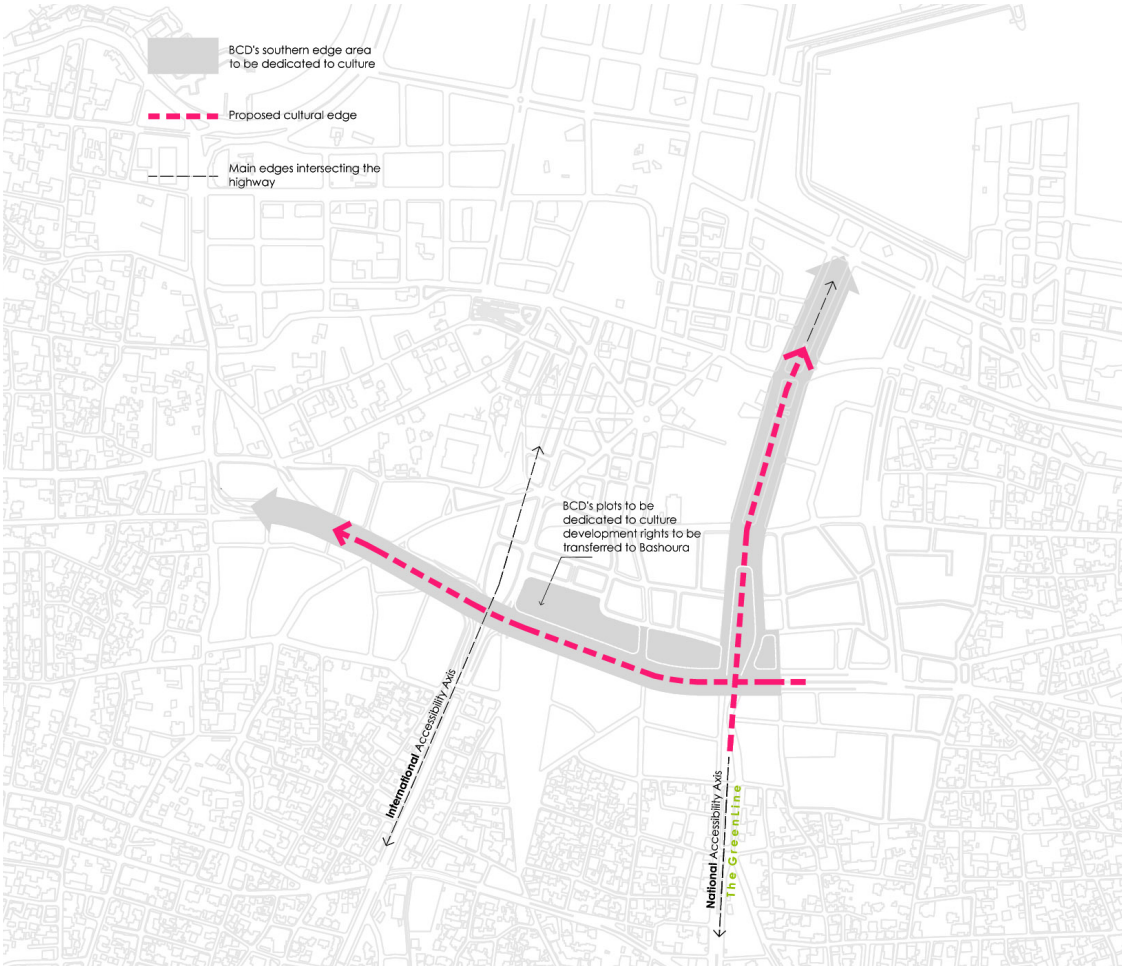

Figure 68: Edges layer, sub-system of site's visual and perceptual strategy

In addition to the Airport road and Damascus road (the Green Line), which are the main edges intersecting the highway, this part of the strategy highlights a very important edge at the scale of the city: the redefinition of the city center's boundary as a cultural edge. The redefined edge (Fig. 68) includes the plots within the block that will house Dar Beirut, the plot containing the bombed Mar Mansour Church, and the BCD plots along Marty's Square Axis. One valuable design example to be considered for the urban revitalization of this zone as a cultural area is the Superkilen, Copenhagen (Appendix 1).

- Nodes:

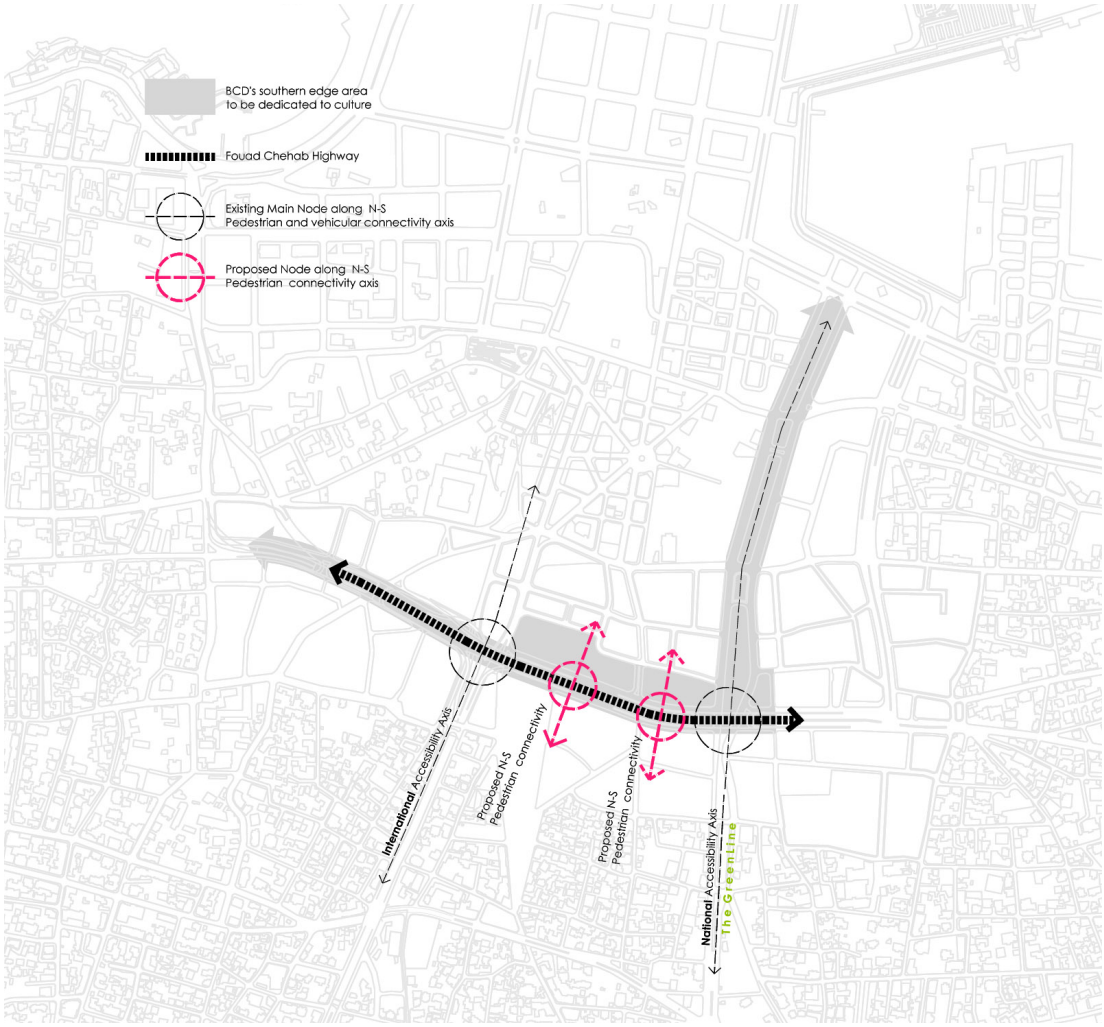

Figure 69: Nodes layer, sub-system of site's visual and perceptual strategy

In order to increase the south-north pedestrian connectivity along the highway, two new nodes are proposed at strategic locations (Fig. 69). These nodes are meeting points of pedestrian paths and cultural activities as they are punctuated by platforms that bridge across the highway and provide public open spaces and vision balconies. These nodes are highlighted by proposed landmark cultural buildings that are highly visible from the highway. Thus, they affect the experience of both pedestrian users and drivers and reinforce the cultural image of the highway along that of the site.

- Paths:

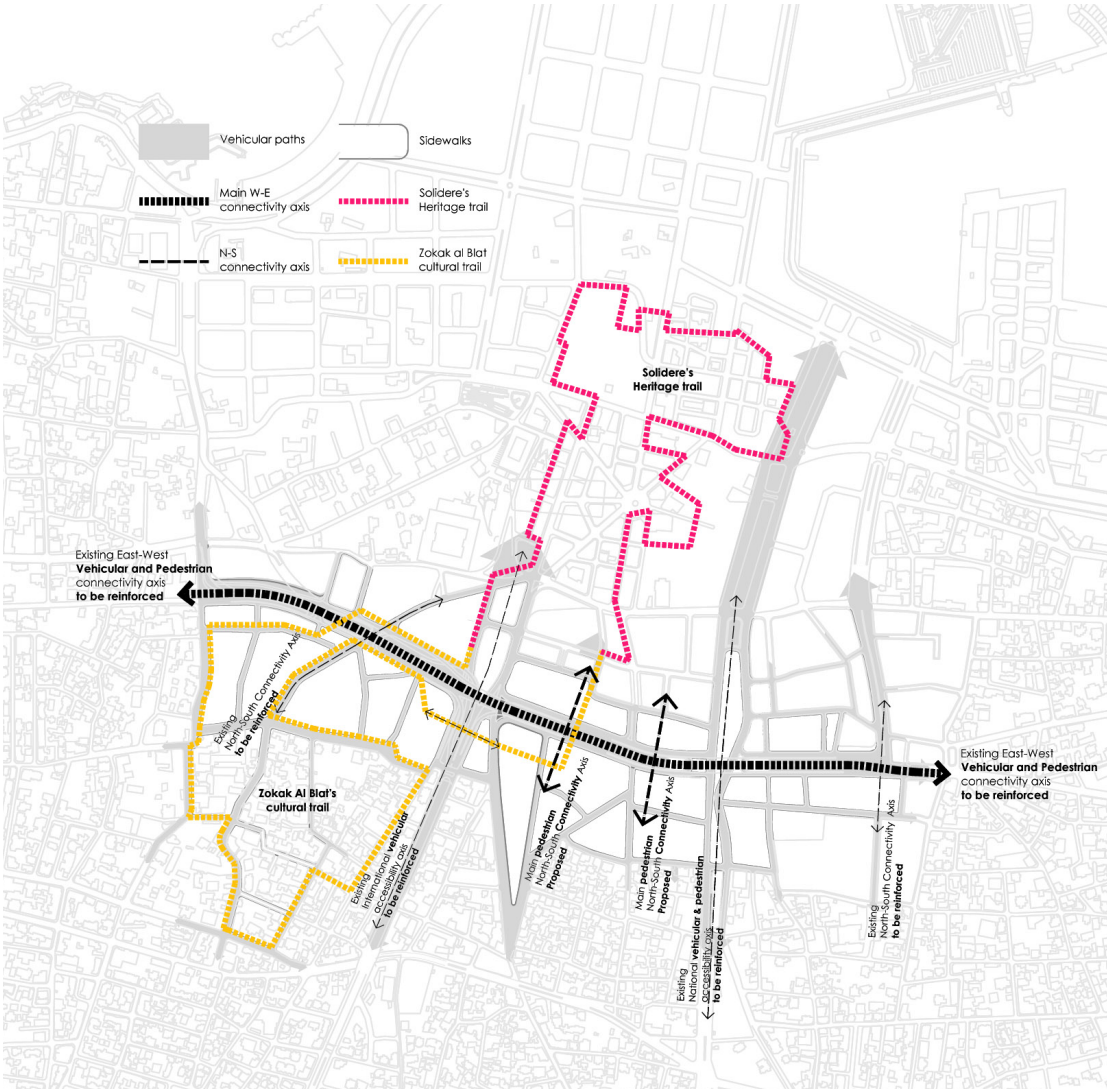

Figure 70: Paths layer, sub-system of site's visual and perceptual strategy

The layer of paths includes all lines of movement. Since the only tangible paths along which information flow are the highway and the heritage trail, this part of the strategy does not differ from the one presented in the original design proposal, which highlighted the lines along which people and goods flow.

- Surfaces:

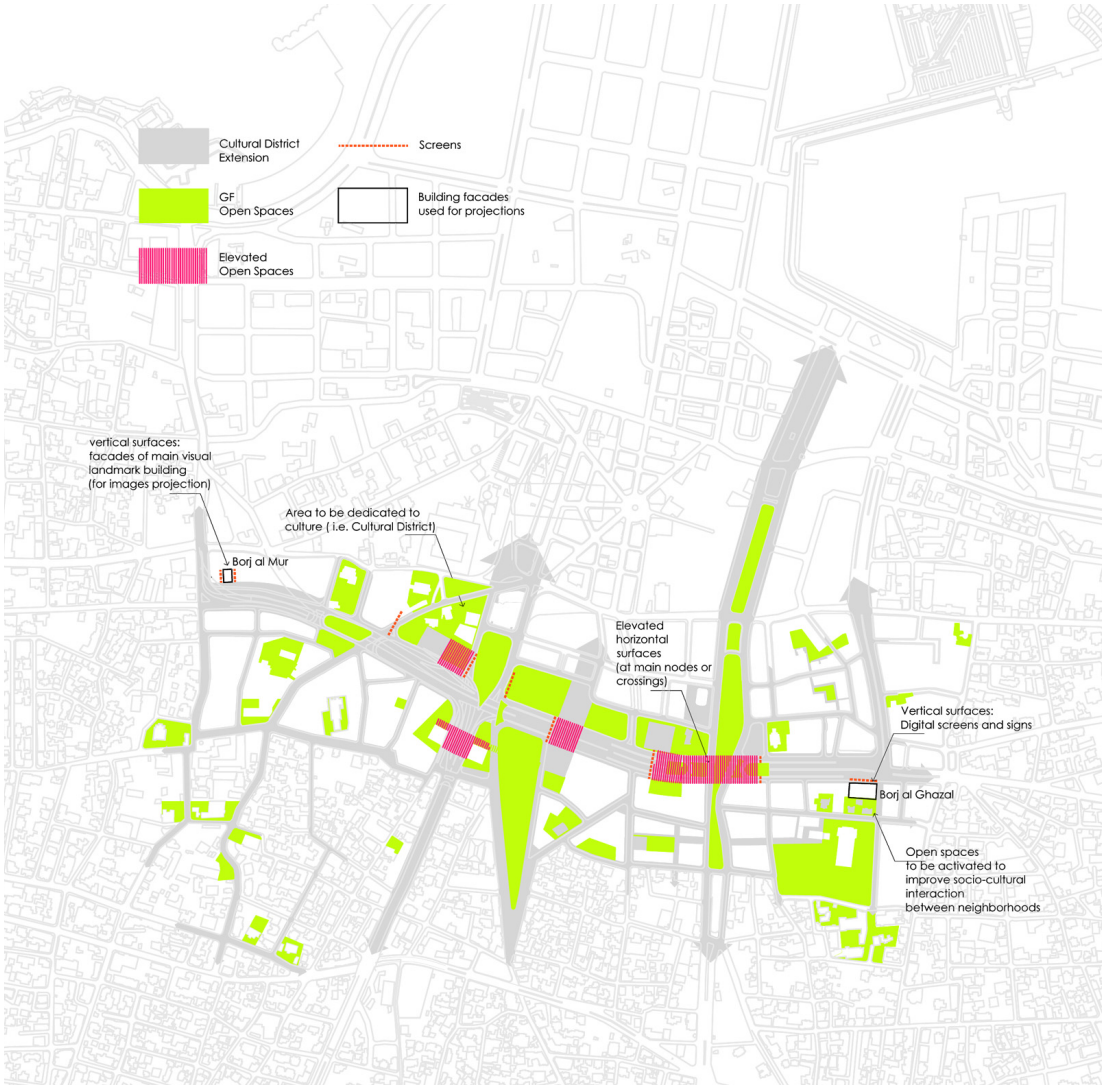

Figure 71: Surfaces layer, sub-system of site's visual and perceptual strategy

Surfaces, are the areas perceived as physically (or culturally) distinct. Surfaces where people and goods flow area horizontal; yet, when it comes to the flow of information and images, these surfaces are also vertical. The latter are a very important part of the visual and perceptual strategy for the highway and were previously discussed. The former, however, include the whole area to be perceived as the cultural district (even when its boundaries are fuzzy). In the surfaces map (Fig. 71), this area is highlighted as well as the large open spaces (horizontal surfaces) within it. These are

spaces for socio-cultural interaction and relaxation; they include: a) open spaces at the ground level and b) open spaces elevated above the highway. Since the vertical surfaces for the flow of information can seen from other points of the site other than the highway, these surfaces are also included in the map.

- Points and landmarks:

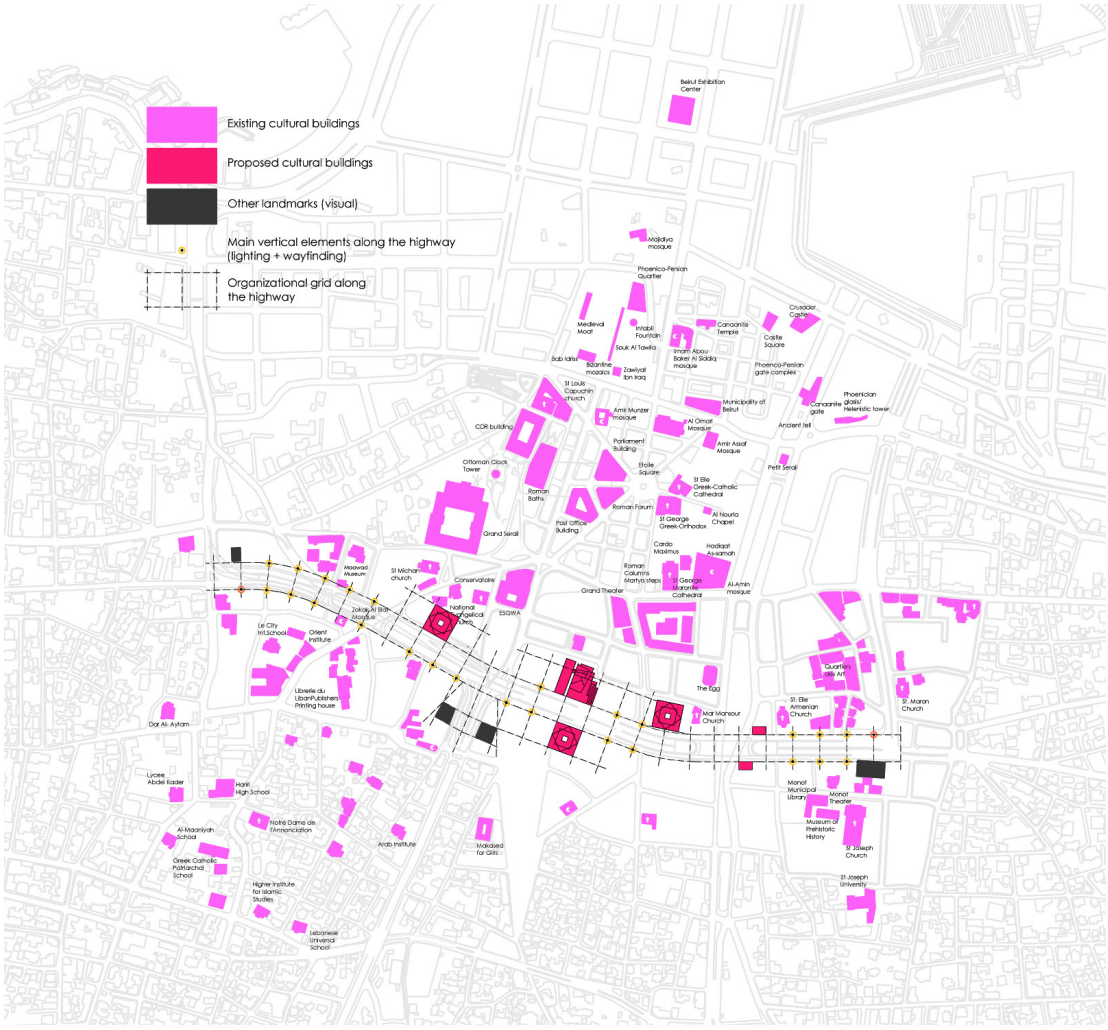

Figure 72: Points and landmarks sub-systems of site's visual and perceptual strategy

This layer includes existing and projected cultural sites, visual landmarks and vertical elements punctuating the highway. The existing and projected cultural sites are the main "points" of the proposed cultural ecology, they do not only define the space

but activate it. They are spaces that house cultural activity, promote movement around the site and enhance its cultural identity. On the other hand, visual landmarks and the vertical elements along the highway do not activate the physical space but provide orientation and points of reference.

B. Spatial Strategy

The formal dimensions of the initial design are herein reviewed in order to: a) include the informational infrastructural system and b) provide guidelines for the organization and development of the site over time.

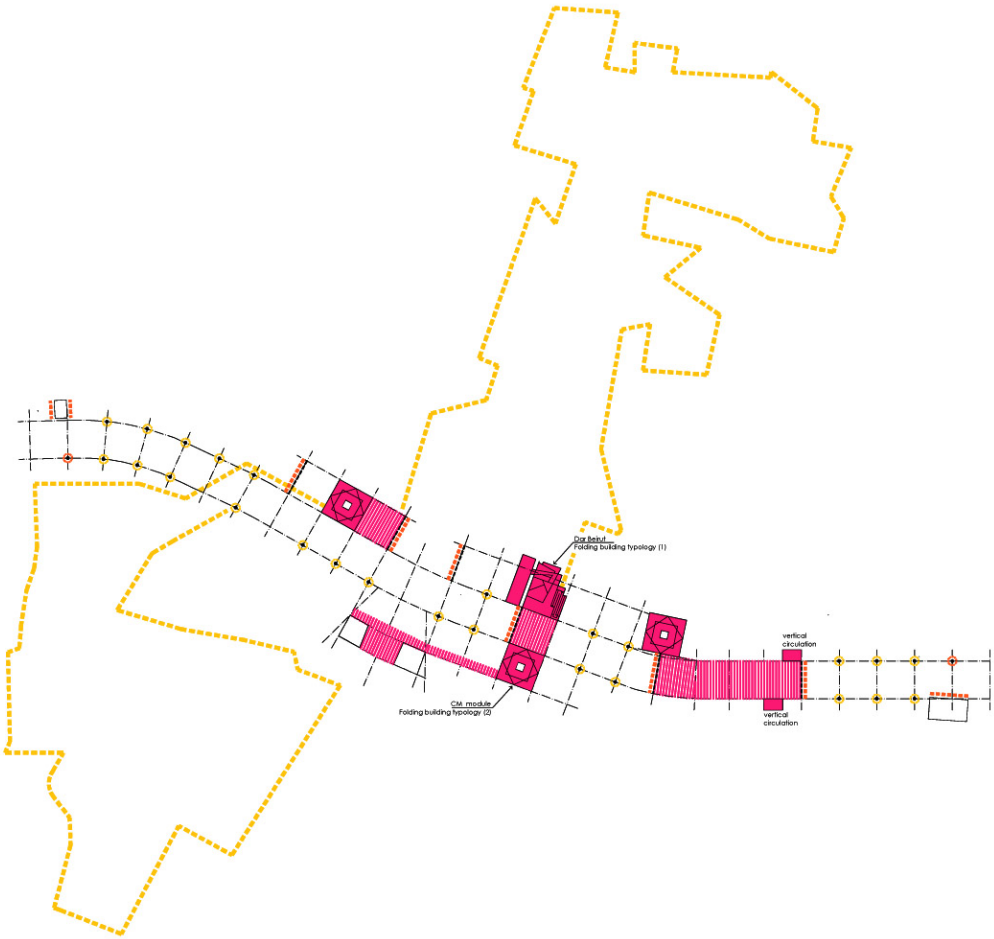

Figure 73: Spatial Strategy, spatial and informational infrastructural systems

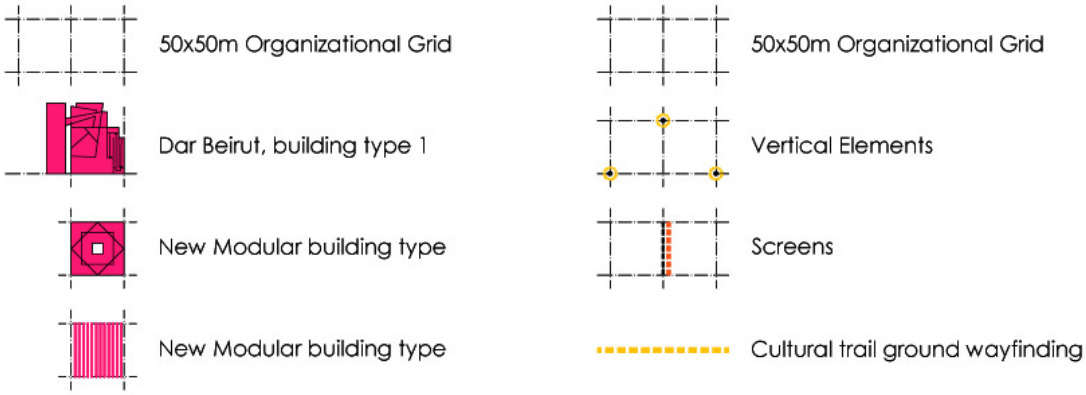

Figure 74: Elements of the spatial and informational infrastructural systems

1. Spatial infrastructural system

The spatial infrastructure initially proposed was inspired by the projected dominant type of Dar Beirut. However, this infrastructure is more of a fixed architectural solution than a flexible building system. Thus, it had to be re-questioned to come up with a spatial infrastructural system made up of clear design parameters and guidelines. The elements of the reviewed infrastructure are:

- A 50x50 meter organizational grid extending along and across the highway. The size of the grid was determined by the width of the highway, the required open spaces and development around it.
- The Dar Beirut folding building type, mildly modified to be incorporated in the modular system.
- A new, 50 x 50 meter, modular building type. This building type is a modification of the previously proposed “Car Museum” building. Like the Car Museum, it provides vertical circulation, open spaces, enclosed spaces and

services; yet, unlike it, it is assigned no fixed cultural program. Moreover, it is repeated along the highway at strategic locations.

- 50 x 50 meter platforms elevated within the organizational grid to: a) bridge between modular building and provide north-south connectivity or b) act as balconies overlooking main visual corridors and accentuating nodes.

2. Informational infrastructural system

This part of the spatial strategy was not part of the initial design. It aims at providing clear design parameters for the distribution of images and information along the highway and throughout the site. The elements of the proposed informational infrastructural system are:

- The 50x50 meter organizational grid extending along and across the highway (as a common denominator to the spatial and informational infrastructural systems)
- Sculptural, vertical lighting, way-finding, and framing elements allocated along the highway according to the point-grid. These elements are 1-meter-wide and their height varies according to their location and function. Moreover, they are designed as part of a seemingly continuous 1-meter-wide colored strip that extends over the sidewalk and accommodates 50 cm wide “peel-up” street furniture.
- Digital screens supported by the above mentioned vertical elements and allocated along the highway, at strategic locations, following the point-grid.
- Heritage trail colored ground (lines and annotation) way-finding.

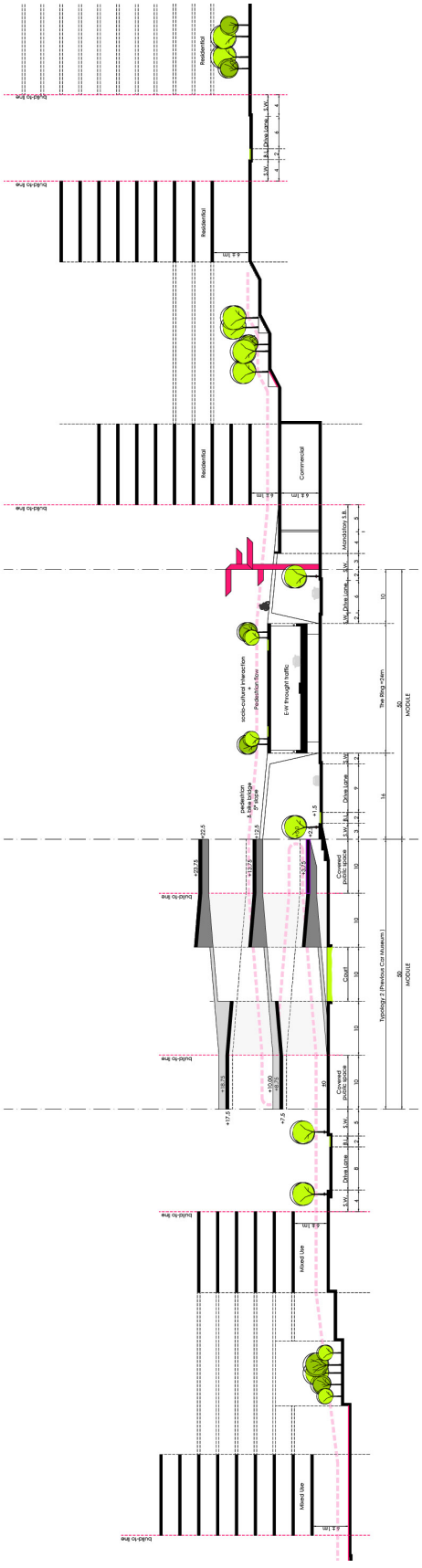

Figure 75: Design guidelines. Updated section.

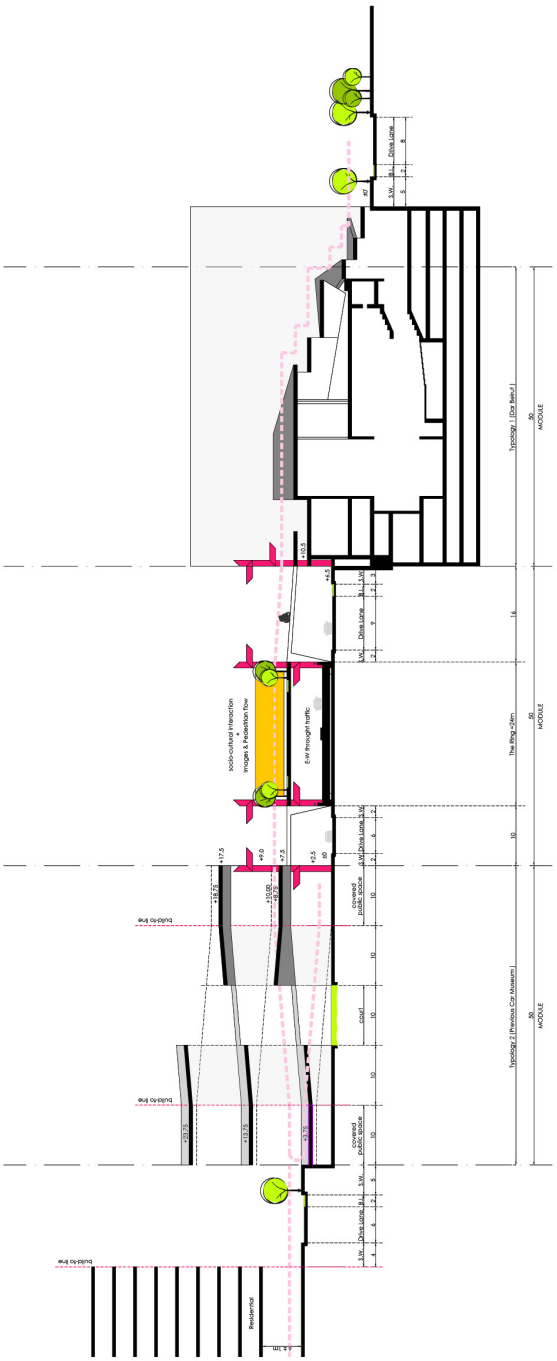

Figure 76: Design guidelines. Section across Dar Beirut.

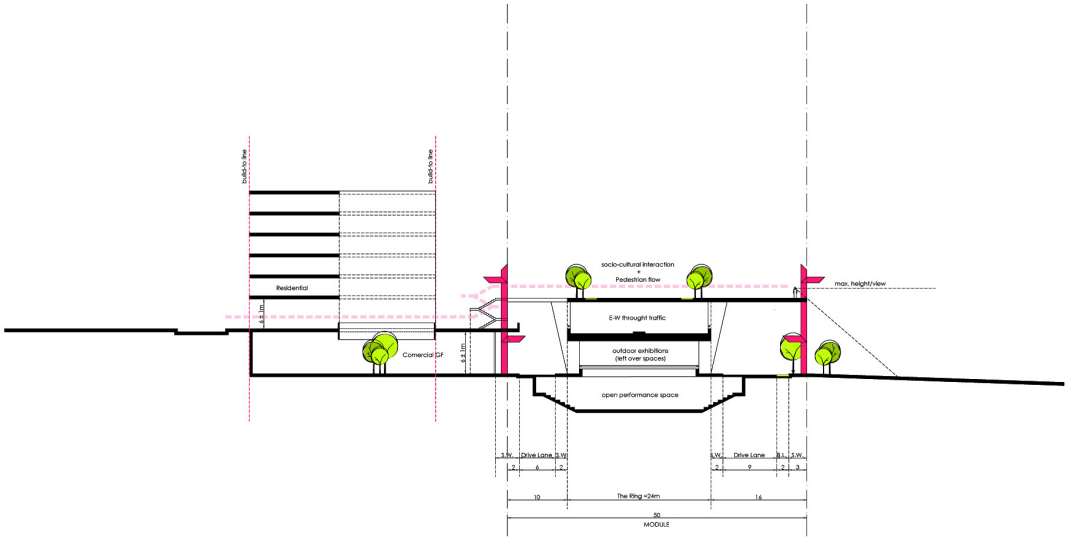

Figure 77: Design guidelines. Updated section along Martyr's square axis.

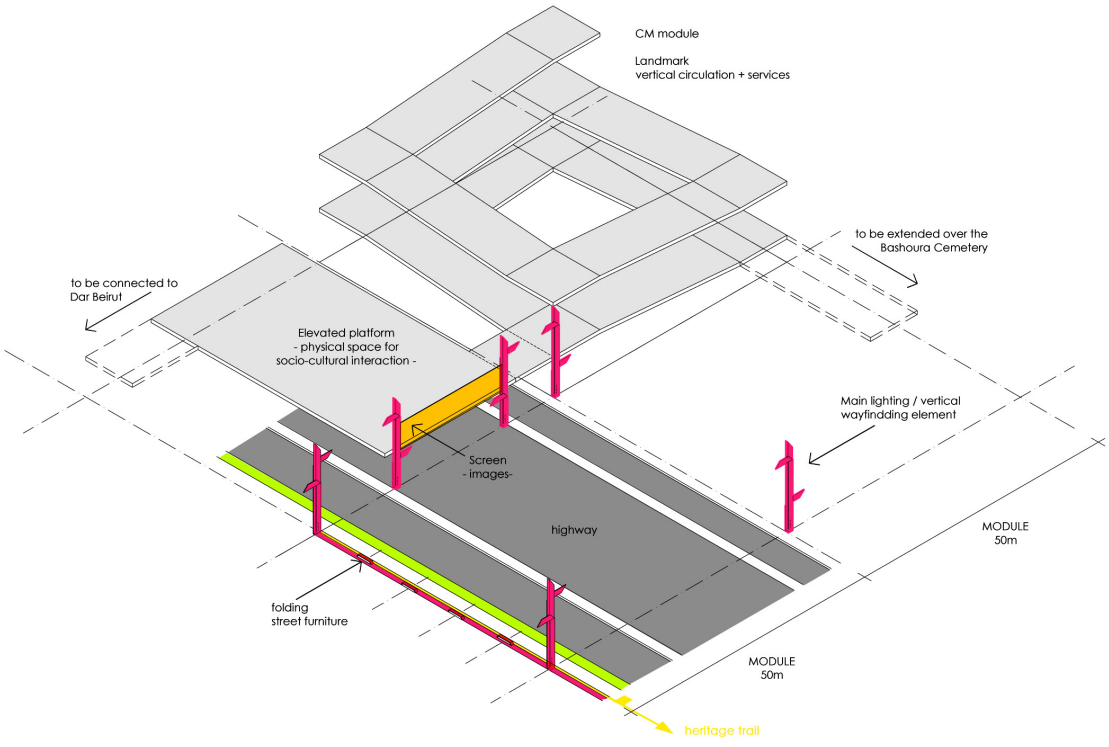

Figure 78: Assemblage of the spatial an informational infrastructural elements within the organizational grid

C. Functional Strategy

The initially proposed functional strategy is herein reviewed to provide a flexible programmatic organizational logic. Accordingly, all newly proposed buildings are designed and arranged to house multiple and changing cultural programs as well as to give citizens the opportunity to create their own scenarios. As for existing buildings, they are classified into different categories, based on the level of activity and programmatic flexibility they can provide. These categories and the buildings they include are summarized in the below map (Fig. 79).

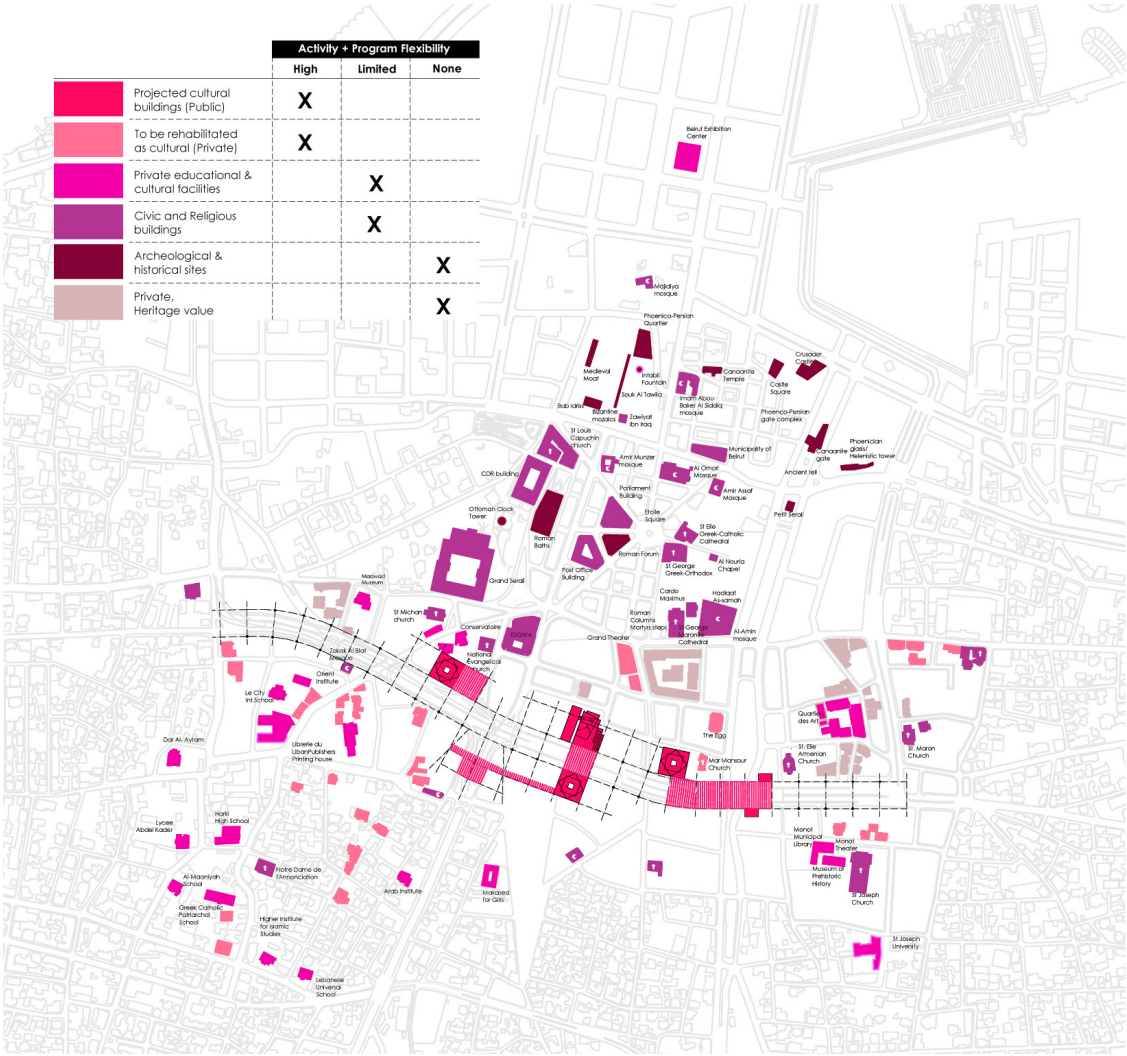

Figure 79: Functional strategy, buildings activity and programmatic flexibility

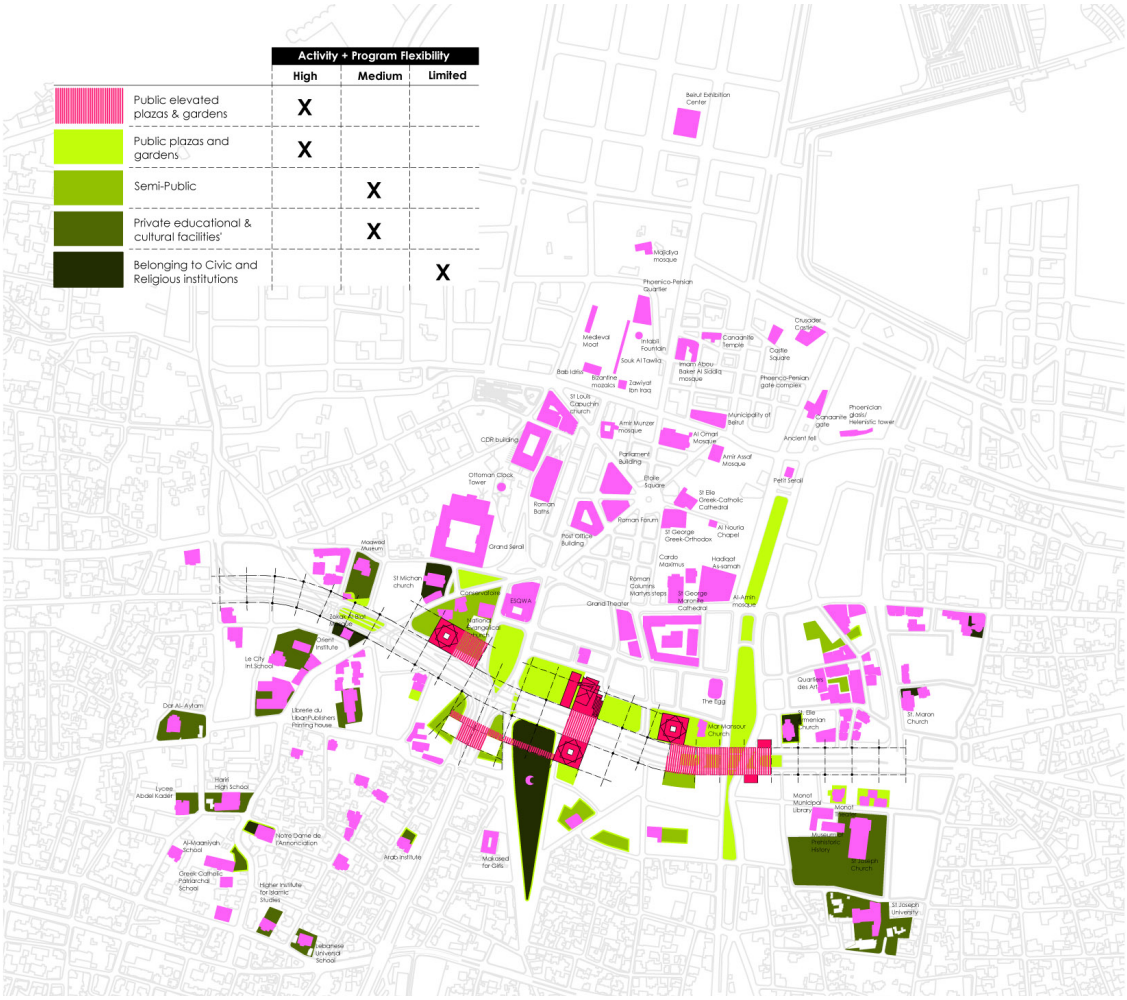

Figure 80: Functional strategy, open spaces accessibility and programmatic flexibility

Creating an ecosystem of projected, existing and potential cultural buildings and open spaces aimed at redirecting the way the city works is a main objective of both, the initial and revisited design. This objective includes the preservation, creative rehabilitation and/or appropriation of heritage buildings for cultural uses, especially those located in the Zokak al Blat area, which, as illustrated in the Design Studio analysis section, are threatened by the current building laws and land speculation. Two projects that illustrate how these buildings could be creatively rehabilitated are the Zokak Al Blat Mansion initiative by Ghassan Maasari (Appendix 2) and the Skate Church by Okada San Miguel (Appendix 3).

CHAPTER V

CONCLUSION

This thesis has critically explored the emerging fields of Architectural Urbanism and Landscape Urbanism to articulate specific design strategies that embrace the complexity, uniqueness and potentiality of infrastructural breaks.

By working along the intersection of the design disciplines of architecture, landscape architecture and urban design, the thesis was not limited to analyzing and proposing new building types, as advocated by Architectural Urbanists, or to creating a network of informal cultural spaces, as per in some Landscape Urbanism works; but merged and tested concepts and design methodologies from these disciplines to come up with a cross-disciplinary framework aimed at redefining the infrastructural break as a constructive part of the socio-cultural fabric and the urban landscape and ecology of the city: a physical/cultural infrastructural solution that adopts building types that can be assembled to form a continuous field, a modular organizational system for the development of the site over time, recycles the landscape of the highway and other transitional or derelict spaces surrounding it, adaptively reuses old buildings of high architectural value, etc.

A. From the Experimental to the Operative

Referring to experimental versus operative quality of the re-conceptualized infrastructural break, the question was raised as to *how far can the proposed physical/cultural infrastructure be activated as a social infrastructure through*

community appropriation and municipality management? To respond to this question and suggest complementary research tracks, the concluding sections below provide: a) alternative programmatic options whose purpose is to demonstrate the community use of the proposed infrastructure at the city and district levels; and b) recommendations for the articulation of detailed guidelines and a legislative framework that could lead to a more flexible zoning code.

1. From physical/cultural infrastructure to social infrastructure

As learned from the literature review, the rapid urbanization and constant changes taking place in contemporary cities require that projects should be strategically designed to house changing programs. The proposed design was thus envisioned as a "smooth" space, a flexible structure able to adapt to changing programmatic requirements and community needs. To provide an illustration of the programmatic flexibility of the proposed physical infrastructural system and how it can be activated as a social infrastructure through community appropriation and municipality management, various programmatic scenarios are herein proposed. Three different scenarios are proposed for each of the main elements of the physical/cultural infrastructure, highlighting the scale, users and and ways of management of each.

The main modular building type is simply articulated to make possible its appropriation and fostering of different cultural and social activities. Large in scale and allocated at strategically and easily accessible locations along the highway, these structures can accommodate a variety of programs that serve at a city scale. As shown in the below image (Fig. 81), this type is flexible enough to provide, along with vertical circulation (a continuous ramp that provides access at every level, eliminating the expense of an elevator) and services: 1) indoor and outdoor exhibition spaces to turn it

into a museum, 2) wide and continuous bike tracks to turn it into a multilevel biking park, 3) uninterrupted ground floor space to accommodate sport fields and wide upper levels which can be easily furnished with outdoor fitness equipment for the creation of an accessible outdoor vertical gymnasium. Acting on a city scale, this structure can be managed by the Ministry of Culture and the Municipality of Beirut, in coordination with groups of community residents and/or school representatives. Moreover, this modular structure not only allows for programmatic flexibility but can also be built on different levels and phases.

The elevated platform infrastructural element is articulated to bridge across the highway while providing uninterrupted space for a variety of cultural and social activities. Some of the suggested programs are: 1) temporary outdoor exhibition, 2) art fair and/or farmers market, 3) concert venue. These platforms serve at a district level and could be maintained, operated and programmed by community residents' groups and/or relevant non-governmental organizations, in partnership with the Municipality of Beirut.

As for the existing buildings to be preserved and rehabilitated, the kind of programs they can house include: 1) a skate park (i.e. in the remaining structural skeleton of Mar Mansour's Church), 2) temporary exhibitions and shows, 3) artists' studios and workshops, 4) a museum of architectural heritage (i.e. Hneineh Palace, Zokak al Blat), etc. Since most of these spaces function at district and neighborhood levels, they could be managed by community residents' groups, artists' collectives and/or specialized non-governmental organizations.

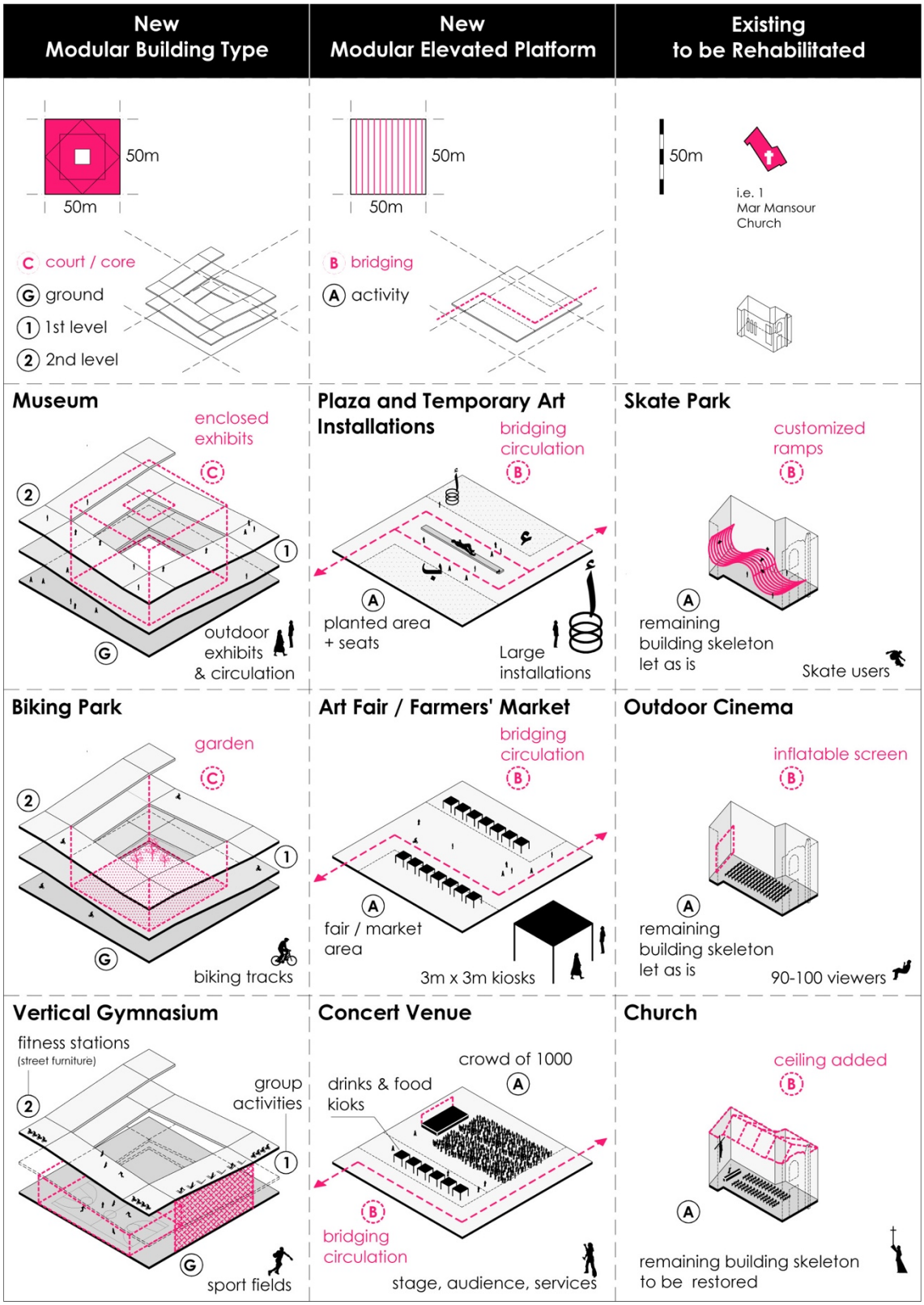

Figure 81: Proposed programs

2. Rethinking the conventional legislative framework

Having as premise 1) the need to consider traffic arteries as dynamic urban spaces that accommodate not only cars but also people and information and 2) the importance of adopting a cross-disciplinary framework for dealing with such complex urban spaces, the following recommendations aim at informing the articulation of a legislative framework that could lead to a more flexible zoning code for the areas along and around transport infrastructures similar to the Fouad Chehab traffic artery:

- To designate the void of high-performance traffic arteries and the plots adjoining them as distinctive zones or districts that depart from the existing district BCD plan and the peri-central blanket zoning.
- To capture the space above and below high-performance traffic arteries.
- To control the reparcelization of the plots surrounding high-performance traffic arteries and to limit the building heights along these plots. To study and define the heights of these buildings in relation to the width of the arteries.
- The areas surrounding high-performance traffic arteries must be given new (unifying) functions whenever necessary and must be made easily accessible by pedestrian networks.
- To take into consideration the cinematographic view of the drivers; to provide orientation and variety.
- These general guidelines may serve as reference to a design review process on a lot by lot basis. A promising track to follow up on through further research is exploring the possibilities of a flexible zoning system that allows both for central planning control as well as direct community participation i.e. bridging the gap between the experimental and the operative.

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