

American University in Cairo

AUC Knowledge Fountain

Theses and Dissertations

2-1-2016

Rethinking Cairo's elevated urban highways: Scoping impacts and potentials

Nermin Dessouky

Follow this and additional works at: <https://fount.aucegypt.edu/etds>

Recommended Citation

APA Citation

Dessouky, N. (2016). *Rethinking Cairo's elevated urban highways: Scoping impacts and potentials* [Master's thesis, the American University in Cairo]. AUC Knowledge Fountain.

<https://fount.aucegypt.edu/etds/591>

MLA Citation

Dessouky, Nermin. *Rethinking Cairo's elevated urban highways: Scoping impacts and potentials*. 2016. American University in Cairo, Master's thesis. *AUC Knowledge Fountain*.

<https://fount.aucegypt.edu/etds/591>

This Thesis is brought to you for free and open access by AUC Knowledge Fountain. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of AUC Knowledge Fountain. For more information, please contact mark.muehlhaeusler@aucegypt.edu.



Rethinking Cairo's Elevated Urban Highways:

Scoping Impacts and Potentials

A Thesis Submitted to The
Center for Sustainable Development

In Partial Fulfillment of the requirements for the degree of
Masters of Science in Sustainable Development

By
Nermin Dessouky

Under the Supervision of

Dr. Khaled Abdelhalim

Assistant Professor of Urban Policy
Public Policy and Administration Department

Fall 2016

Acknowledgment

First I would like to express my gratitude to my Advisor Dr. Khaled Abdelhalim for his continuous support, patience and insightful inputs which allowed me to work on a topic that was of great interest to me. I would like to also thank my thesis committee Dr. Basil Kamel and Dr. Heba Safey Eldin, your valuable comments really helped in refining my work and enriching my thesis.

Second I would like to thank all the interviewees who agreed to give me their time and insights. I thank them for inviting me into their homes and shops, and for trusting me and enriching my research with their valuable opinions. Without them, this research wouldn't have been possible.

I thank my most amazing friends Ihsaan, Rania, Aya and Renad for always listening to my academic drama and being there for me every single step of the way. A special gratitude goes to Ruaa, Noha and Sheri for pushing me through the final end of the writing process and brainstorming with me through all phases of the research.

Last but not least I would like to thank my family for their support, and for being so patient and understanding with my hectic schedule. Most importantly I thank my mother Nisreen Istanbouly for being my ultimate support system and always reminding me that I am capable of achieving anything that I set my mind to. Thank you mama, I couldn't have asked for a better mother.

Table of Contents

Abstract	8
Chapter 1: Introduction	9
1.1. Problem statement.....	9
1.2. Research Context	10
1.3. Objectives of Research.....	12
1.4. Conceptual framework.....	12
1.5. Methodology	15
1.5.1. Data collection	15
1.5.2. Case study selection.....	16
1.5.3. Interviewee selection and sample.....	16
1.6. Limitations	17
2. Chapter 2: Literature review	18
2.1. History of international experience with elevated urban highways	18
2.2. Criticism of elevated urban highways policies	21
2.3. Overview of different urban solutions (Removing – Reconfiguring- Rehabilitating)	29
2.4. Urban Theories.....	34
2.4.1. The Practice of Everyday Life: Michel de Certeau 1988.....	34
2.4.2. A theory of good city form: Kevin Lynch 1981	35
2.4.3. Finding lost space: Roger Trancik 1986	35
2.4.4. Spaces and Typology of toleration.....	36
2.5. Elevated urban highways in Greater Cairo and related policies	38
3. Empirical Field work methodology, analysis and flow	45
4. Chapter 3: El Azhar Bridge	47
4.1. Background	47
4.2. Selection rationale.....	50
4.3. Scoping Impacts.....	51
4.4. Spatial analysis (Location, Space, Structure, land and the Sense of Ownership)	57
4.5. Potential uses and Future projections.....	62
5. Chapter 4: 15th of May Bridge	64
5.1. Background	64
5.2. Selection rationale.....	66

5.3.	Scoping Impacts.....	66
.5.4	Spatial analysis (Location, Space, Structure, land and the Sense of Ownership).....	72
5.5.	Potential uses and Future projections.....	79
6.	Chapter 5: Saft El Laban Corridor.....	81
6.1.	Background.....	81
6.2.	Selection rationale.....	82
6.3.	Scoping Impacts.....	82
.6.4	Spatial analysis (Location, Space, Structure, land and the Sense of Ownership).....	92
6.5.	Potential uses and Future projections.....	98
7.	Chapter 6: Research Findings and Recommendations.....	101
7.1.	Research findings.....	101
7.2.	Discussion of the findings.....	104
7.3.	Potential laws and regulations implications.....	106
7.4.	Potential policy implications.....	109
7.5.	Recommendations.....	111
8.	Bibliography.....	115
9.	Appendix A : Interviewee’s profile.....	119
10.	Appendix B: interview Question Bundle.....	121
11.	Appendix C: Interviewee Consent Form.....	123

List of Figures

Figure 1 Cheonggyecheon highway in Korea before removal (ITDP & EMBARQ, 2012)	30
Figure 2 The regenerated area after the removal of the highway (ITDP & EMBARQ, 2012)	30
Figure 3 proposed and existing ring roads of Greater Cairo (GOPP, 2009)	41
Figure 4 Proposed and existing highways of Greater Cairo (GOPP, 2009)	41
Figure 5 high traffic rates over Cairo's elevated highways (GOPP, 2012).....	42
Figure 6 existing proposed road networks (GOPP,2012).....	42
Figure 7 El Azhar bridge shaded in Orange cutting through the dense fabric (Map retrieved from Google Earth,2016)	48
Figure 8 El Azhar Bridge cutting between the buildings (personal photograph by author. 9. Aug.2016.).	49
Figure 9 El Azhar Tunnel drawing (Fahmi, W.; Sutton, 2003).....	50
Figure 10 relation between the highway and the buildings (personal photograph by author. 9. Aug.2016)	52
Figure 11 floors overlooking the bridge turned to commercial and storage areas (personal photograph by author. 9. Aug.2016)	52
Figure 12 traffic flow over the elevated road compared to the crowded street level (personal photograph by author. 3. Sep.2016).....	53
Figure 13 EL Azhar Bridge relation with "El Kady Yahia Mosque" (personal photograph by author. 11.Sep.2016)	54
Figure 14 fenced parking spots (personal photograph by author. 11. Sep.2016)	58
Figure 15 lower deck used for different human activities (personal photograph by author. 9. Aug.2016)	58
Figure 16 on the right highways structure showing traces of old advertisements (personal photograph by author. 11. Sep.2016)	59
Figure 17 on the left pedestrian waiting for the bus under the shade of the deck (personal photograph by author. 9. Aug.2016)	59
Figure 18 Zamalek marked in Red with arrows showing the different direction of traffic flow that cross over Zamalek (Map retrieved from google earth, 2016)	64
Figure 19 The 15 th of May Bridge marked in red cutting through El Zamalek Island (Map retrieved from google earth, 2016).....	65
Figure 20 The 26th of July street shaded from the elevated structure (Personal photograph by author. 3. Sep.2016)	68
Figure 21 elevated highway shedding its shade on the main street (Personal photograph by author. 3. Sep.2016)	68
Figure 22 The column billboards in the morning (Personal photograph by author. 3. Sep.2016)	73
Figure 23 the internal illuminated billboards lighting the street at night (Personal photograph by author. 29. Aug.2016).....	73
Figure 24 spaces under the structure being used as parking spaces (Personal photograph by author. 3. Sep.2016)	74
Figure 25 a street vendor selling vegetables under the Bridge (Personal photograph by author. 3. Sep.2016)	74

Figure 26 A mosque established under the bridge with AC units installed (Personal photograph by author. 3. Sep.2016)	75
Figure 27 one of the entrances to El Sawy cultural wheel (Personal photograph by author. 3. Sep.2016)	75
Figure 28 outdoor space of El Sawy cultural wheel (Personal photograph by author. 3. Sep.2016)	76
Figure 31 light structure used to close the space under the elevated road (Personal photograph by author. 3. Sep.2016)	76
Figure 30 the deck of the elevated road acting as a slab for the outdoor space (Personal photograph by author. 3. Sep.2016)	76
Figure 29 adapting the internal spaces of El Sawy cultural wheel around the structure of the bridge (Personal photograph by author. 3. Sep.2016).....	76
Figure 32 The prime Location of Saft El Laban between the new settlements and Cairo (map retrieved from Google Earth, 2016)	81
Figure 33 The entrance of Saft El Laban 2003 before building the corridor (map retrieved from Google Earth, 2016).....	83
Figure 34 The entrance of Saft El Laban 2016 (Map retrieved from Google earth, 2016)	83
Figure 35 Saft El Laban Main road condition (personal photograph by author. 24. Sep.2016)	85
Figure 36 The quality of streets in Saft El Laban (personal photograph by author. 24. Sep.2016)	85
Figure 37 The close relation between the corridor and the building (personal photograph by author. 24. Sep.2016)	87
Figure 38 steel bars installed on the windows of the second floor (personal photograph by author. 24. Sep.2016)	87
Figure 39 Car Maintenance workshop at the begging of Saft El Laban Corridor (personal photograph by author. 24. Sep.2016)	89
Figure 40 Tire workshops at the entrance of Saft El Laban (personal photograph by author. 24. Sep.2016)	89
Figure 41 using the structure of the corridor for advertisement banners (personal photograph by author. 24. Sep.2016)	94
Figure 42 Kiosk in Saft El Laban integrating the corridor structure within its own structure. (Personal photograph by author. 24. Sep.2016).....	94
Figure 43 Coffee Shop with brick fence under the corridor (Personal photograph by author. 24. Sep.2016)	97
Figure 44 Metal Storage Cabinet installed under the corridor (Personal photograph by author. 24. Sep.2016)	97
Figure 45 LCD screen and stereos installed by one of the coffee shops under corridor (Personal photograph by author. 24. Sep.2016).....	97
Figure 46 students of the free school under the bridge in India (Shafi, 2016).....	99
Figure 47 The classroom space initiated under the elevated structure in India (Shafi, 2016)	99

List of Diagrams

Diagram 1 Conceptual Framework	14
Diagram 2 Major impacts associated with the presence of Highways in the international literature.....	28
Diagram 3 Scoping different impacts and their interrelations in El Azhar area	55
Diagram 4 Impacts verified from the literature review	56
Diagram 5 Spatial rights emerging in the space with reflection on Lynch (1981)	60
Diagram 6 Activities developed under El Azhar Bridge	61
Diagram 7 The 15th of May Bridge impacts and their interrelations on El Zamalek area.....	70
Diagram 8 Impacts of the 15th of May bridge verified from the literature review.....	71
Diagram 9 Activities under the 15th of May bridge.....	77
Diagram 10 Spatial rights emerging in the space with reflection on Lynch (1981)	79
Diagram 11 different impacts scoped resulting from Saft El Laban Corridor and their interrelations	91
Diagram 12 Impacts of Saft El Laban verified from the literature review	92
Diagram 13 Activities under Saft El Laban Corridor.....	95
Diagram 14 Spatial rights emerging in the space with reflection on Lynch (1981)	98

Abstract

Urban policies of the last 50 years in Egypt focused on extending and developing road networks to the extent that Egyptians used to describe it as the era of roads and bridges. From such policy came an introduction of a big number of elevated urban highways that cuts through Cairo's urban fabric to ensure the flow of the city. Elevated urban highways are often perceived as a tool for mobility, but it introduces much more complicated impacts on the urban fabric and the communities that they pass through. While the international literature has long pointed out such impacts there is a gap in the local Egyptian literature that discusses the notion of elevated urban highways and its various impacts. It is argued that highways introduce a set of social, environmental and economic impacts, but most importantly some of those impacts are actual potentials that can be utilized to serve the needs of the community. This research aims at scoping the impacts and potentials of Cairo's elevated urban highways. Understanding the impacts and potentials will provide better information for decision-making leading to better urban management of affected areas. This is achieved through studying three independent cases of elevated urban highways in Cairo: Al Azhar bridge, 15th of May bridge, and Saft El-Laban corridor. Through site visits and in-depth interviews with local stakeholders, the research provides an understanding of how the presence of elevated structure impacted each community, analyzes its spatial elements and scopes its potential uses. Based on the observations and investigations, many findings were revealed, like how communities perceive elevated highways differently, and how a negative impact in one case can actually be perceived as a positive impact in another case. Empirical findings presented interesting observations that sometimes contradict with the international literature and theories. The field work lead to realizing how new structures can lead to the formation of different power dynamics related to claiming ownership in each case. Observations and research reflected how the laws and regulations in regards to spaces under the elevated highways are vague, leading to misunderstandings and conflicts in regards to ownership and uses. Most importantly discussions reveal that Cairo's elevated urban highway holds much more spatial potentials than the common belief of being just a tool for mobility.

Chapter 1: Introduction

It is argued that urban planning is one of those discourses that are continually progressing with new ideas and new theories, yet the urban challenges around the globe are not even close of being solved. Unlike other discourses, it takes decades to test whether a single approach to urban planning is successful or not, and when a plan proves its failure it is always too late to change its applications. In the last century planning approaches have changed dramatically. The modernist approach to planning and the suburban living are now heavily criticized by the new theory of compacted cities. Policy makers over the globe while trying to revitalize the city centers, they came to realize how some of the modern built environment elements have had a great role when it comes to degrading the cities. The modern structures and built environment elements are now being blamed for decreasing the urban quality of the city and creating undefined spaces. One of those heavily criticized elements introduced by the modernist planners are the elevated urban highways. An elevated urban highway is known as the main road that is raised above the ground level connecting between two centers, towns or even cities.

1.1. Problem statement

In the past, elevated urban highways were seen as the easiest and most efficient solution to solve traffic problems. Such belief pushed a lot of urban planners to introduce highways that cut through the cities' dense fabric. With time urbanists started realizing that although an elevated urban highway can solve traffic problems it introduces a whole new set of social, environmental, economic and urban problems to the communities that it passes through (ITDP & EMBARQ, 2012). Adding to that, elevated urban highways have estimated life spans after that they become a burden on the authority's budget due to high maintenance expenditures (Jaffe, 2015). Perceptions on elevated urban highways changed from a tool for better traffic flow to a tool that casts a shadow on cities and decreases their urban quality (Napolitan & Zegras, 2007). Where many of the built elevated urban highways in the 20th century are approaching the end of their estimated life spans urban planners over the world are taking decisions whether they should revitalize, reconfigure them or even remove them. Such decisions are being made with an eye on sustainability keeping in mind the impacted communities and the quality of the urban settings.

Countries over the globe have already revisited their highway policies and there are a lot of international examples of cities voting to remove the elevated urban highways in order to revitalize the city. For example, Seoul in South Korea replaced its 9.4 km highway with a boulevard and a park in 2005. The Embarcadero freeway in San Francisco was also replaced by a boulevard giving the city back its waterfront in 2000. Other countries have replaced their highways with tunnels (Ebeling, 2013). While urban activists are trying to utilize spaces under the remaining highways to make better use out of such lost spaces, better integrate it with the community and reconnect the ruptured urban fabric underneath it.

Where the condition of each highway differs from one case to the other, many aspects can influence such urban decision. It can be impacted by the wider location of the structure, traffic flow, laws and regulations, the nature of the district, the age of the highways, community socioeconomics, the formality of the community and the country's policies.

It is important to realize that the success of one solution in a neighborhood doesn't mean that it will be successful if applied in another neighborhood. A negative impact of a highway in one community can be seen as a positive impact in another case. Planners and decisions makers cannot take such decisions without studying each case independently to understand its wide impacts and what types of potentials can be made out of it. Therefore, the analysis of the dynamics of each case through understanding the impacts and potentials of the presence of the elevated highways in each case will lead to better future urban decisions.

Hence, the research problem can be formulated in the great impacts of the elevated urban highways on different local communities, and the overlooked potentials that accompany the existence of an elevated highway in different communities.

1.2. Research Context

In Egypt, the rise of the urban highway policy started in the 1970s, when the high commission of Cairo developed a master plan of Greater Cairo. The 1970 master plan favored the transportation infrastructure announcing plans of major urban highways cutting through Cairo in different directions (Sutton & Fahmi, 2001). Such plan was parallel to the new satellite city plans in which it made it easier to cross over the old Cairo to reach the newer cities. Forty years after such plan Cairo is currently famous for its multiple urban elevated highways and bridges.

The elevated highway oriented urban policies are still leading most of the Egyptian urban strategies since the 1970s. Such consistent policies left Egypt with 2267 bridge¹ all over Egypt according to CAPMAS statistics in 2015 (CAPMAS, 2015). The general authority for roads and bridges announced that they are responsible for 1536 elevated structure in which 700 out of them have passed their estimated life spans and pose danger to citizens. Authority representatives announced that maintaining such structures demands huge budgets annually (Kamel, 2016). With such high number of elevated structures that have passed their life spans, such structures have turned into an unsafe option that is in constant demand of maintenance and stressing on the country's budget and decreasing the overall urban quality of neighborhoods that they pass-through.

On the other hand, Cairo is also witnessing a trend of revitalizing city centers, where officials and urban activists are starting to give more attention to old and culturally rich neighborhoods. City centers are now the focus of regeneration initiatives, due to their high urban potentials. But many of Cairo's neighborhoods are blighted with elevated urban highways cutting right through them like El Azhar Bridge, and 6th of October bridge. Therefore, rethinking how Cairo's elevated urban highways can directly feed into and interact with the current regeneration efforts is a stressing need.

The local situation when it comes to having a high number of elevated urban highways that have already passed their estimated lifespans gives a great importance to discussing such topic. However, Cairo's strategic urban plans propose introducing new elevated highways to cut through the city (GOPP, 2012). Which reflect a great need to understand the situation of elevated urban highways in Cairo to better inform urban planners' decisions. Evidently, there is a lack of literature and research work that tackle the topic of elevated urban highways in Egypt. The existing literature mostly discusses the lack of maintenance without reflecting how the presence of elevated highway impact communities differently and alter the urban activities. Therefore, a better understanding of the impacts and potentials of the elevated urban highway is greatly needed within the local context.

¹ Such number reflect all types of elevated roads including elevated railways, pedestrian bridges, elevated highways, etc.

1.3. Objectives of Research

The objectives of the research lie within three main dimensions that can be reflected in four verbs that will be discussed in details. Those four verbs are *to highlight*, *to verify*, *to explore*, and *to initiate*.

The research aims in the beginning to *highlight* the different impacts that the elevated urban highways have done to Greater Cairo neighborhoods and their surrounding communities, and how communities perceive and adapt to such structures.

The second objective of the research is to verify the international literature within the local context. This will happen through comparing between the impacts scoped in the international literature and impacts scoped in the empirical work. Verification will also happen through asking how the urban theories and urban solutions are applicable within a local context.

The third objective of the research is to *explore* potentials to deal with the existing elevated urban highways in Greater Cairo. This will be presented mainly through the analysis of case studies as this allows the potentials presented to be context specific and reflecting the social, environmental and economic needs of the neighborhoods.

The last and the general objective of the research is to be the *initiator* of future public conversations between policymakers, urban planners, highway agencies, community, and other stakeholders. As the research aims to assess the existing situation of Cairo's elevated urban highways, to open future dialogue that questions the position of highways as the optimum solution to Cairo's commuting problems.

1.4. Conceptual framework

Elevated highways are a reality in Greater Cairo and seem to be part of its future planning. The research assumes that understanding the different impacts and potentials of the presence of elevated urban highways will help decision and policy makers to take insightful urban decisions regarding existing and future elevated urban highways. The local situation of elevated urban highways conveys many issues related to urban, social, environmental and economic impacts, along with urban interventions that do not respond to such stressing issues. The range of local and central stakeholders related to the topic increases the complexity of the topic. While there are experts and state representatives common in all cases, each case also has its own set of local

stakeholders. Case stakeholders vary between residents of the community, commercial business owners, property owners, along with the urban activists of the area.

On the other hand, there are key influencers that impact the status of each case, such as the location of the elevated highway, the type of the district, the socioeconomic status of the community, traffic flow in the area, and the age of each structure. Such influences vary from one case to the other and they play a vital role in setting the impacts and potentials of the structure. The study focuses on 3 major themes that relate to elevated highways that were identified in the literature review: first is their impact (social, environmental and economic). Scoping the impacts informs the second theme, which is studying the spatial context, ownership and control perceptions in each case. The third theme is using the spatial analysis to identify the potential uses and future projections of urban highways. Those broader topics guided the formulation of the conceptual framework and the data collection and analysis of each case study. Comprehending all the above dynamics of each case will provide better information for decision making leading to better urban management of impacted areas. The conceptual framework is explained visually in diagram 1.

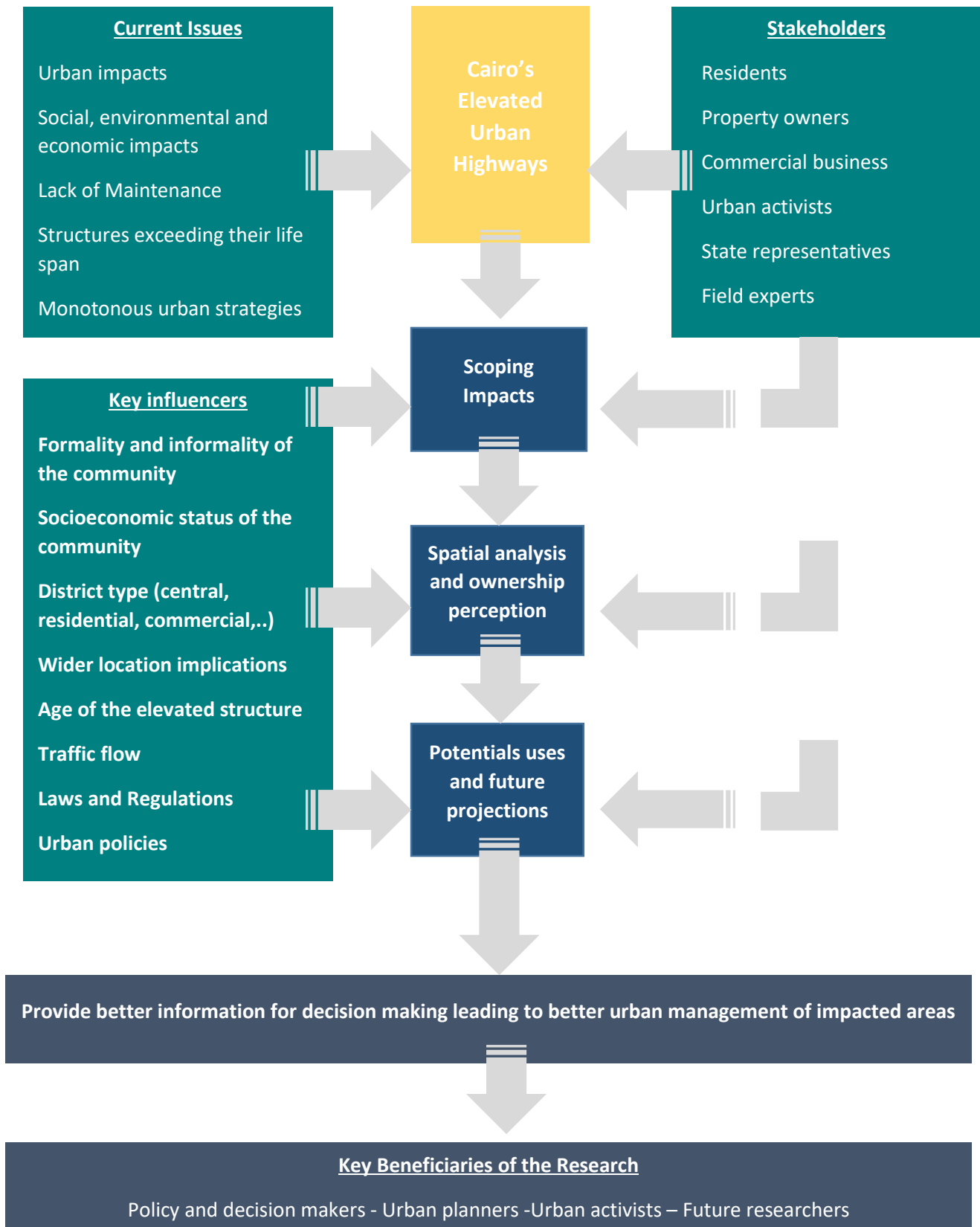


Diagram 1 Conceptual Framework

1.5. Methodology

Since the topic of elevated urban highways in Egypt is under-researched if compared with the international situation, therefore research will be exploring the different impacts and potentials regarding the elevated urban highways in Egypt. Hence opening the door for future research on the same topic. The exploratory nature of the research directed the research method to be qualitative. The qualitative approach will help in providing the complex and exploratory detailed descriptions of how people experience the presence of the elevated urban highways in their community (Mack, Woodson, McQueen, Guest, & Namey, 2011).

The methodological framework for this research will be a scoping study, as it aims to map the key components of the research topic to reflect its complex relations. Scoping studies normally aim to examine and organize the extent, range and nature of a topic. A scoping approach is useful in mapping fields of study that are difficult to visualize due to its different and complex components. The scoping study is mostly used in complex research areas, or in areas that have not been reviewed compressively before (Arksey & O'Malley, 2005).

1.5.1. Data collection

Methods of identifying sources of knowledge in the literature review followed the main circles of the topic. The main circles are the international standing of elevated highways through time, different urban responses that deal with elevated highways, urban theories that touch upon spatial problems introduced by highways, and finally the local approach on the topic. Sources ranged from International academic articles, books, institutional and governmental reports, and local newspapers.

Doing primary research in the Egyptian context and on the topic of elevated urban highways is challenging since most of the information is still undocumented. Therefore, conducting in-depth semi-structured interviews will be very effective to obtain insightful information on the topic and understand its complexity. Choosing semi-structured format will open the door for new aspects to be introduced by the interviewees which might add to the complexity of the topic. The primary data will be collected through the interviews. In addition to site observations in each of the case study sites in order to determine the existent conditions of the site, photo voice techniques will

also be used to reflect the site observations. In addition, secondary data is collected from published government reports, newspaper articles and published interviews.

1.5.2. Case study selection

Three cases of elevated urban highways in Greater Cairo will be studied in order to offer a robust insight on the situation and decrease the possibility of generalizing the output of the research. Cases selection is purposive through selecting three diverse cases that were built over three different decades and passing over completely different urban and community nature, fulfilling the requirement that these case studies are representative of the typical cases of urban highways in Greater Cairo. The selection rationale for each case is explained independently in each case.

1.5.3. Interviewee selection and sample

The interviews were conducted with community candidates who can give daily insights on the elevated urban highway cutting through their community. Residents and shop owners who are directly overlooking the elevated urban highways are perfect candidates to provide the direct and indirect impacts of the structure. Beyond the local context, urban experts that can reflect on the topic from a broader and more professional context were selected and interviewed.

Since the community members and experts can reflect different and subjective perceptions, therefore, purposive sampling was used in the beginning to identify a potential participant in each community that is in direct contact with the elevated highway. After the identification of the first potential member in the community, a snowballing technique was used. This technique was chosen since community members were mostly skeptic to have in-depth interviews with the researcher. Through the snowballing technique, the participants were asked to recommend another person from their community who can potentially contribute to the study. Getting introduced from another community member made the participants willing to give in-depth insights about their community. The purposive sampling was also used while selecting urban experts in which participants were chosen based on their relevance to the particular topic. A total of 27 in-depth interviews were conducted within the field work. 21 interview targeted community members that are living or working in buildings directly overlooking elevated structures. In addition to 6 interviews conducted with urban activists and field experts. The complete list of interviews conducted and the interviewee profile, initials, code and date are presented in appendix A.

1.6. Limitations

Discussing a topic like the elevated urban highways of Cairo is a broad topic that involves a lot of stakeholders and key players. Moreover, through every elevated highway, new key players might appear depending on the location and the situation of the case. Due to time and resources limitations, the interviews focused on interviewing residents and commercial business owners (shop owners) of each case, along with few urban activists. Interviewing Planners, authority representatives and field experts would have added new dimensions to the topic, but time limitations and the sensitive nature of such positions made it harder to be able to conduct interviews with them. Therefore, the scope of this research will be limited to the local stakeholders of each case study reflecting the insights of the community and excluding the authority representatives and field experts.

Chapter 2: Literature review

2.1. History of international experience with elevated urban highways

With the rise of automobile culture in the beginning of the 20th century, the whole urban planning criteria and preferences changed, many new urban elements were added. Cities needed to adapt to the culture of automobile quickly. Therefore, vast development was required in the streets and circulation networks to accommodate the spreading culture of automobiles. As the crowded, narrow and slow streets of the city were not seen as the best option for the fast automobiles, planners introduced the concept of highways and after that the elevated urban highways.

Through the review of the literature, there seems to be a confusion between the terms *Highway*, *Elevated Highway*, *Bridge*, *Flyover*, and *Overpass*. Therefore, it is important to point out the following difference between such terms. A *Highway* is defined by Oxford Dictionary as the main road that can be connecting major cities, towns or centers and an elevated highway is a highway that is raised above the ground level. The same dictionary defines *Bridges* as “A structure carrying a road, path, railway, etc. across a river, road, or another obstacle”(Oxford Dictionaries, n.d.). While Collins dictionary defined *Flyover* as “an intersection of two roads at which one is carried over the other by a bridge”. Collins used the same definition for *Overpass* but pointed that overpass is normally used in the UK while flyover in the US(Collins Dictionary, n.d.). This explains that the term bridge is normally used to describe the structure itself, flyover and overpass are the act of intersection between two roads in which one road is raised over the other, while elevated highways described the fast raised above the ground level roads connecting major areas.

For the means of providing a fast circulation network to connect between major centers, urban planners opted for building elevated highways. Elevated highways were introduced as major raised streets that are going to cause minimum disturbance to the surrounding communities “because it passes over them”, restrict its access to only cars -leading to faster motion, and avoid intersections. Some elevated highways were introduced outside major cities and others would pass over the crowded urban cities which are known as elevated urban highways (Mohl, 2002). Almost a century has passed after the introduction of the elevated urban highways to some cities, therefore, a lot of international literature can be found tracking their development internationally and their various impacts over decades. It can be clearly noticed through tracking the literature development how

urban planners went from advocating for highways to criticizing them. Therefore, it is very important to review the different literature on highways, its impacts and how it developed through time.

As the current urban planners are calling to remove elevated urban highways from the cities, urban planners from the past were the ones who called for the construction of elevated highways as a solution for mobility. MacKaye and Mumford (1931) discussed the need for highways in their article “The Townless Highway”. MacKaye and Mumford saw that the motorists driving on the fast roads crossing the cities were forced to slow down in the downtown area and to interact with the pedestrians and they were polluting the environment. MacKaye and Mumford proposed that highways should be elevated and pulled out of the city environment, in order to avoid distraction, hide the older neighborhoods, and limit access to pedestrian and slower mobility options. MacKaye and Mumford saw in highways a chance for a safe environment, fewer accidents and less pollution resulting from the separation between pedestrians and automobiles (MacKaye & Mumford, 1931). From 1940 till 1960’s policy makers followed on MacKaye, Mumford, and many urban planners and their proposals to lift the highways, and accordingly they pushed highways in the heart of cities and executed a lot of elevated urban highways (ITDP & EMBARQ, 2012).

In his review of the first era of highway planning between the 1940’s and 1950’s, Bauman (1991) explains how city planners partnered with downtown businessmen, civic leaders, reform politicians under the label of “pro-growth coalition” (Bauman, 1991, p.504). Such alliance believed that the survival of downtown cities lies within the development of big structures like highway systems. The alliance argued that highway systems would help revitalize urban cores by lifting the jammed street, leading to flourishing downtown business, and restoring the healthy residential environment. Paul Oppermann, the planning director of San Francisco city, announced in a public speech in 1950 that highways are going to be the urban backbone of the city as they are going to separate the city into logical areas and at the same time link different sections of the city with fast accessible routes (Mohl, 2002).

Elevated urban Highways were thought as the perfect way to absorb the rise of automobiles and pass over jammed neighborhoods. Moss explains that highways have completely transformed the urban landscape between the period of 1950 and 1960 (Moss, Zhang, & Anderson, 2014). As DiMento (2009) reflects that during that time highways were seen as a sign of modernism and

development, policy-makers linked highways to economic success. Planners thought that the elevated urban highways crossing the cities will decrease traffic congestion and provide more access to downtown but the exact opposite happened. In the United States, the US Highway Act depending on the federal aid highway planned in the 1950s for 40,000 miles of highways and completed 50% of them in the 1960s (DiMento, 2009). The aim was to provide interconnection into and between all cities, penetrating the heart of metropolitan areas, enclosing large cities by inner and outer belts as an essential requirement of future growth and development (Mohl, 2002).

Robert Moses, the famous city planner who was responsible and commissioned much of the major urban projects in New York city between the 1930s and the 1960s, saw highways as the ultimate solution to urban problems (Mohl, 2002). For Moses highways needed to go right through cities, not around them to provide better circulation, solve traffic problems and at the same time upgrade the surrounding neighborhoods. Moses saw that New York is an overbuilt environment so he needed to cut the way for highways with “a meat ax” (Mohl, 2002, p.27). City planners saw highways as a chance to stimulate downtown business, raise property values and, speed redevelopment and limit the spread of slums. Therefore city planners joined forces with downtown developers, official, experts, politicians and the automobile industry to make use of every moment to lobby for highways projects (Mohl, 2002).

Mohl (2002) explains how the Automobile industry partnered with the engineers to develop a vision of technological efficient highways to speed private vehicles to their destination, passing over the monster clogged cities. Mohl (2002) elaborates how General Motors sponsored an exhibition in New York under the name of “Futurama” in 1939 to portray their vision of cities of tomorrow. The exhibition featured modern elevated highways flying through great skyscrapers. General motors drew an image of free flowing national motorways system that will connect all big cities. General Motors was promoting the advance of technology trying to link the idea of nation’s development to automobile and highways. The exhibition stimulated public thinking to favor the construction of highways transmitting a notion where the future of cities lies within developing roads (Mohl, 2002).

The Highway Act was not only limited to the US, earlier in the 1920s the famous Autostrada (130 km long highway) was built in Italy to link between Milan and the northern Italian lakes (Saiz, 2006). Around the same time a proposal for a German motorway network started initially with a

private company, in 1933 the government adopted a similar plan under the name of “Autobahn” a publicly owned company (Voigtländer & Voth, 2015). The Autobahn was the most important project to the government aiming to reduce unemployment rates in Germany and mobilize the whole population. Such project was used to reduce opposition and win the support of the citizens, and it was the one who inspired the highways interstate project in the US (Voigtländer & Voth, 2015).

The highway move was later caught by other countries. In Brazil, a spate of new urban highways was built between the 1960s and the 1970s. In China, all the urban land is governmentally owned which made it even easier for the government to build highways, in India the government worked into developing and expanding of flyovers turning them into limited access highways (ITDP & EMBARQ, 2012).

2.2. Criticism of elevated urban highways policies

Around the same time that the concept of elevated highways started spreading in the developing countries, intellectuals from the developed countries started realizing and discussing the impact of the elevated urban highways on the built environment.

In the 1960s Jane Jacobs along with many other urban planners started to realize the vast negative impacts that have resulted from introducing the elevated urban highways to cities. In “The Death and Life of great American” Cities, Jacobs (1961) discussed such impacts underlining the different impacts on both the society and the built environment. Jacobs highlighted on the unintended consequences of urban highways ranging from environmental degradation, change in land uses and death of pedestrian life. For Jacobs, cities should encourage social interaction at street level, favor walking, biking and the use of public transit to encourage people to talk to each other. Jacobs saw highways as giant creatures that would cut through intimate neighborhoods, cast a shadow on them, destroy them and jeopardize their pedestrian life (Jacobs, 1961).

Lewis Mumford who wrote in the 1930s about the need of elevating the highways and separating it from the city came back in the 1960s to alert on the damage done by Highways crossing the cities (MacKaye & Mumford, 1931) (Mumford, 1963). Mumford predicted that by the time the US is done with implementing its highway program it will be done with wiping out every area of freedom. Mumford explained how highways have transferred the life of the American families to

dull suburbs with minimum sociability and communication, no pedestrian life and turning the American citizen day job into full-time drivers. Mumford criticized engineers by saying that they regard their own work, “highways,” as more important than the human function that they serve. Mumford describes how the highway engineers’ lack of social and historical knowledge lead them into repeating the same fatal mistakes over and over. Mumford (1963) compared the elevated highway experiment to the elevated railroad experience in the middle of the 19th century. As Mumford explains how the demolition of the elevated railroads (after realizing its negative impacts) was regarded as a sign of development, but around the same time planners started planning for elevated highways. Mumford defended his ideas by highlighting how the elevated structure lowered the value of surrounding properties and their supporting columns prevent the space under them to be properly used for a proper surface transportation. Mumford concluded that in order to make the best out of the highway system one must focus on planning a pedestrian circulation for inner cities and developing mass transportation (Mumford, 1963).

Halprin in 1966 discussed how an elevated urban highway can damage the neighborhood that it passes through from different dimensions.

“Elevated freeways have done even worse damage to the areas through which they pass. They have blocked out light and air; they have brought blight into the city through their great shadows on the ground and through the noise of their traffic. Worse still, the surfaces under them have been devoted to parking lots, automobile junkyards, cyclone fences, and rubbish. These elements more surely than the freeway itself have gone far to uglify the cities through which it passes.” (Halprin, 1966, p. 24)

Such initiatives have awakened the urban activism between the period of the 1970s and 1980s. The concept of urban highways started to evolve from carrying a positive annotation of development and success to a negative annotation of degradation and suppress. Kabir (2009) notes that the urban planners discovered that the negative impacts of urban highways outnumbered their needs. Kabir discusses how planners realized that the automobile riders passing over elevated highways failed to connect with the city centers stating that elevated urban highways formed a physical and social barrier between the commuter and the downtowns.

Saiz (2006) argued that highways are a note of dictatorship, as the policy makers’ focus on spending money on a private transportation system rather than a public transit system. Saiz highlights how highways were a major concern for two of the most powerful regimes over history, Mussolini creating 500 km of the Italian Autostrada and Hitler creating 2100 km of the German

autobahn. Saiz (2006) marked four theories that link lack of democracy and highways development. In the first theory, Saiz notes that urban elevated highways are an easy tool with high social returns that can be used to express that the country is developing; policy makers use urban elevated highways to enhance the prestige of the regime in front of the local citizens and internationally community. In the second theory, Saiz compares how democratic countries choose to spend more money on welfare-related consumption expenditure issues and public transportation in comparison to less democratic countries. The third theory explains how maintaining the wide, good quality roads network is a priority for less democratic countries and military regimes to assure more control, internal repression, and external military intervention. Fourth democratic governments choose not to spend on roads and infrastructure due to its high expenditure rate which may affect the economic stability of the regime and choose to transfer such duties to future governments (Saiz, 2006).

Baum-Snow (2007) raised the notion of the relation between elevated urban highways and suburbanization. Baum-Snow argues that during the 1950s and the 1990s the urban population in the cities of the US declined by 17 % despite the fact that the population of the metropolitan area as a whole grew by 72 % system (Baum-Snow, 2007). Baum-Snow estimated that a new highway passing through a central city will decrease its population by 18%. Baum-Snow reflected on the land use theory that was developed in 1964 by Alonso, stating that faster commuting times increase the demand on suburbs housing instead of central cities. To prove his theory Baum-Snow compared rates of suburbanization between areas that witnessed high rates of highway construction and areas that witnessed low rate of highways construction. Baum-Snow also linked the urban employment decentralization to the elevated urban highway systems that allowed big firms to relocate to suburbia. Such study pointed out the major changes that happened to the land use patterns in the US and its relation to the elevated highway system (Baum-Snow, 2007).

Carvero (2009) agreed with Baum-Snow by saying that building elevated urban highways unleashes land use adjustments and open the door for urban sprawl that leads to high environmental and social costs. Carvero points out that the elevated urban highways form barriers, cast shadows and spray noise, fumes, and vibrations on the unprivileged lands that surround them. Carvero (2009) wonder if the mobility and economic benefits of elevated urban highways offset their impact on the urban quality and place making. Such study drew connections between the removal

of elevated urban highways in some cities and increasing the livability of indicators of the cities yielding high financial returns (Cervero, 2009).

Schindler (2015) discussed highways under the concept of architectural exclusion and how it can be a physical tool of the built environment used to discriminate and segregate. Schindler describes how the placement of highways was often done intentionally to displace poor neighborhoods. The study point fingers to the US planning and how it decided intentionally to route highways through the city centers to get rid of the low-income neighborhoods and reshape the physical environment. This was often done to eliminate poor neighborhoods (often with African American population) from the scene and was commonly known among critics of the highways move as “*white roads through black bedrooms*” (Schindler, 2015, p.1966).

Mohl (2002) agreed with Schindler on the matter of using highway construction as an excuse to destroy low-income neighborhoods, stating that the highways public policy have had a dramatic lasting impact on shaping the urban in the US. Mohl explains how the concrete blocks, cloverleaf and access ramps of highways created huge areas of dead, empty and useless spaces inside the city centers. Mohl quoted from the historian Mark I. Gelfand : “*No federal venture spent more funds in urban areas and returned fewer dividends to central cities than the national highway program*” (Gelfand, 1975, p.222). The “*Wide ribbons of concrete*” (Mohl, 2002, p.2) as Mohl named them tore down the old long and established residential communities’ inner cities just in order to connect city cores to each other.

The impact of elevated urban highways was not only limited to disturbing urban communities and dislocating people. The long social, environmental and economic impacts were well studied in the different literature.

Highways social impacts on the community varied from creating congestions to attracting undesirable activities. The off ramps of highways inside the cities often cause disturbance to the capacity of the city streets, creating congestion under them (Ebeling, 2013). The areas under the elevated urban highways are often shaded and not visible which attract undesirable or activities that threaten the safety of the community. The elevated urban highways also increase the heat island effect inside cities, decreasing the quality of life around them, which leads to decreasing the value of properties. (Ebeling, 2013).

For properties that are located close to the elevated urban highways, they suffer from relatively high locally hazardous air pollutants, high greenhouse gas emissions and noise. The high pollution resulting from the elevated urban highways led some studies to note that asthma cases tend to increase in areas around elevated urban highways (Ebeling, 2013). Levin (2002) did a 5-year long community assessment of highways exposure and health. The study aimed to determine how the vehicular pollution resulting from highways affects the health of people living near highways. Levin discussed the impact of fine and ultrafine air particles on health. The study measured the amount of air particles within 100 meters of highways and found it to be triple the amount of air particles in other areas far from highways (Levin, 2012). Levin points out that people who live and work near highways will disproportionately suffer from their health impacts. He explains that even if the residents know about the health impacts of living near highways they are mostly low-income communities who do not have the financial means to relocate to a healthier location (Levin, 2012). Exposure to diesel exhaust and air particles has many health impacts on residents living near highways. Health impacts vary from long-term impacts like increasing the risk to cancer, and immediate impacts like eyes, nose and lung irritation. Continuous exposure to the exhaust can cause headaches, lung inflammation, asthma attacks and increased frequency of childhood illness (Office of Environmental Health Hazard Assessment (OEHHA), 2001). Other studies linked living near highways to preterm birth and low weight of babies at birth. A study stated that mothers who live within 220 yards of highways witnessed 58% increased the risk of preterm birth, 81 percent increased risk of low birth weight (Généreux, Auger, Goneau, & Daniel, 2008).

Building elevated highways in the middle of the city fabric can impact the economy, not only the current local economic activities but also the economic potentials of the neighborhood as a whole. As the traffic is lifted above the stores limiting the number of cars driving in actual streets in front of the shops, therefore limiting the number of potential shoppers (Ebeling, 2013). The impact of highways on businesses especially business types that are depending on passerby traffic is negative. Studies indicate that business tends to change activities in order to adapt to the construction of elevated highways changing the whole economic image of the area (Ebeling, 2013). Parolin (2011) stressed in his research on the economic impacts of highways and the pre and post highway situation. In his research Parolin indicates that generally when highways pass over small towns they increase their adverse economic risks. Parolin recommended the development of mitigation measures for the adverse economic impacts of highways, and to foster

pre and post bypass cooperative planning arrangements (Parolin, 2011). Highways are generally known to increase the value of areas that they extend to because they make new areas more accessible. This positive impact decreases in areas that are directly located near highways, as research indicated that the value of residential properties tend to decrease if they are located directly near highways (Carey, 2001). The impact of elevated highways is not only limited to business and property values, it sometimes impacts the municipal income, as highways will occupy valuable lands in the middle of the fabric without paying any taxes. So every meter occupied by an elevated urban highway passing inside the city could have been a meter for housing, commercial or entertainment, or even a public space which serve needs and pay taxes. For example, In Milwaukee USA, the removal of an urban freeway unlocked 26 acres of urban valuable lands to be redeveloped (Ebeling, 2013).

The economic studies regarding highways are not only limited to their impact on the economy but also on the long-term sustainability and durability of the elevated highway structure itself. It is important to note that elevated highways are not a lasting structure, they have an average lifespan, and during that lifespan they need regular maintenance. Significant damages usually start appearing before highways bridges reach their midlife span. Repairs and maintenance represent a significant cost on the elevated urban highways budgets. The average lifespan of highway bridges is around 70 years (NDT resource center, n.d.). While other resources indicated that the average life span of elevated urban highways is between 40 to 50 years (Levinson & Kahn, 2011). Since most of the elevated highways started appearing in the 1940s most of them are currently approaching the end of their lifespan (NDT resource center, n.d.). It is important to note that every kilometer of new elevated roads will one day turn into an old bridge that needs regular maintenance and eventually will be expired. Governments prioritize new construction projects over maintenance projects (Jaffe, 2015). While different initiatives are trying to grab the attention of policy makers on the maintenance issues and budgets, policy makers tend to prefer constructing new elevated highways. Decision makers tend to shrink the budget of maintenance in favor of putting more budget in new constructions, as they prefer to get their names attached to new achievements (Jaffe, 2015).

The continuity of planning for new highways from policy makers is contradicting many studies that discussed their various impacts. Other theories also question whether elevated urban highways

ever solved the traffic congestion that they were intended to do. Carvero (2012) and many other authors have seen elevated urban highways as a useless solution to traffic congestions. Elevated urban highways are short lived, as additional road capacities get consumed quickly by generated traffic. Carvero (2012) discusses the theory of induced demand explaining that building more and wider highways induce the demand of more and more highways, as new highways encourage more citizens to shift to private transportation modes and create new and longer trips. Carvero notes that the failure to account the theory of induced demand have exaggerated the travel times which by time makes the note of increasing road capacity useless (Carvero, 2002). Such theory was discussed as early as the 1980's by Owens:

“Meeting the ever-growing needs for transport capacity has often proved to be a fruitless task, as the persistence in urban traffic jams attest”(Owens, 1985, p.366).

With all such proves that not only the elevated urban highways have damaged the neighborhoods they have also failed to solve the problem that they were created to solve. Park concludes to the failure of urban highways in his introductory statement in the publication of “The Life and Death of Urban Highways” as he says that they were an untested idea when it was deployed around the world:

“Decades of failing to deliver congestion relief and improve safety combined with the hard evidence of damaged neighborhoods have proven that the urban highway is a failed experiment.”(Park, 2012, p.2).

The attitude of planners is starting to change since most of the elevated urban highways that were built in the 50s and 60s are approaching the end of their lifespan making them unsafe. This situation poses a lot of importance on the maintenance budget but also opens new opportunities of rethinking the role of existing elevated urban highways. Since maintaining elevated highways is putting a load on government budgets a lot of policy makers are rethinking whether they are worth it or not (ITDP & EMBARQ, 2012). While considering the vast impacts of elevated urban highways that were discovered through time, including the economic and maintenance pressures, new urban solutions for elevated urban highways are being reconsidered.

Through studying the international literature and impacts that were associated with the presence of the elevated structures. It was clear how the urban planners, city managers, and intellects shifted positions from pro highways to anti highways over a period less than 30 years. Major impacts can be summed and divided into urban and spatial impacts, social impacts, environmental impacts, and

economic impacts. The spatial and urban impacts can be concluded in ideas related to lost spaces, land use adjustments, urban sprawl along with cutting through the fabric. The social impacts discuss ideas of the death of pedestrian life, community exclusions, physical segregation, and its association with the notion of dictatorship. The environmental impacts are mostly further implications resulting from the increase in pollution coming from an increase of vehicular presence. Such increase is associated with environmental degradation, lung inflammation, noise, vibration and heat island effect. The economic impacts reflect on valuable land occupation, change in local economic commercial activities and decreasing property values. Economic efficiency concerns were also raised in relation to the lifespan of elevated highways and high maintenance costs.



Diagram 2 Major impacts associated with the presence of Highways in the international literature

Although such impacts may seem common in most of the literature they may vary from one case to another, therefore, a case by case impact scoping is always needed to verify the presence of such impacts, add or subtract from it. How can impacts like the change in the value of properties, economic activities, exclusion, land use and much more change in areas with different socioeconomic aspects, location, and urban nature? Most importantly what are the various urban solutions that can be developed to alter and lessen such impacts?

2.3. Overview of different urban solutions (Removing – Reconfiguring- Rehabilitating)

Urban planners discovered that the desire for efficient mobility systems that link different areas and funnel goods and labor is coming at the expense of place making, barriers, visual blight, noise, vibrations, casting shadows and the social and economic wellbeing of communities. However, it is legitimate to ask whether the benefits of the elevated urban highways offset their negative impacts?

There is a new paradigm shift that shifts the priority of cities from automobile based to livability based. With the international shift of values and trending ideas of sustainable development, human scale and life quality reconsidering the role of mobility in the city is becoming very valid. Due to the huge amounts of money needed to rehabilitate the existing highways, new urban solutions are starting to evolve in the west. The first solution and the most drastic option is removing the elevated urban highway totally. The second solution is reconfiguring the elevated urban highway either by turning it into a tunnel, burying it as a sunken highway, or relocating it in another area with potentially less impact. The third solution is to keep the existing highway but rehabilitates it and the urban setting around it while trying to absorb or lessen its negative urban impacts (Ebeling, 2013).

All three options have been applied in different cases around the world. Decisions differ from one case to the other as taking such a decision depends on the neighborhood development requirements, location, policy, budget and transportation needs. There is no one solution that can be applied everywhere. The fact that highways are approaching the end of their lifespan offers a great opportunity to reconsider their urban setting and how to lessen their impact (Ebeling, 2013).

The first option may sound drastic but the phenomenon of removing the elevated urban highways is becoming very common. While some cases already removed it other cases are openly discussing this option. Cities like New York, Toronto, Seoul (South Korea), Portland and Milwaukee already removed elevated urban highways (ITDP & EMBARQ, 2012).



Figure 1 Cheonggyecheon highway in Korea before removal (ITDP & EMBARQ, 2012)



Figure 2 The regenerated area after the removal of the highway (ITDP & EMBARQ, 2012)

Napolitan and Zegras (2007) suggest four conditions that need to be there in order for a government to take the decision of removing an elevated urban highway. First is the bad condition of the elevated urban highway, raising serious concerns about its structural safety. In some cases, removing the elevated urban highway became an option after witnessing a storm or an earthquake that damaged the structure (ex. Embarcadero, San Francisco). The second condition is when a window of opportunity being opened, which is a factor that pushes the idea of removing as a valid option. In some cases, this happened when a temporary shutdown of a highway happened and it did not cause a traffic congestion, therefore, planners started to think if the highway was actually needed in this location. In other cases, the window of opportunity comes as a certain event or an activist community who pushes the removal option as a valid one (Napolitan & Zegras, 2007). Third condition is having an evidence of changing values towards mobility. For example, the economic gains that are expected to be achieved after removing it (quality of life, land value, commercial revival) is perceived to be higher than the value of vehicle mobility (ex. Estimating the release of locked valuable land for development). The fourth condition is very dependent on the values of people in control; decision makers, community activists, or other empowered citizens who value other future gains than infrastructure and are following different objectives other than just mobility enhancement objective. Napolitan and Zegras make it clear that ONLY after the above four conditions will the option of removing the elevated urban highway may be considered (Napolitan & Zegras, 2007).

In other cases, where mobility and flow of the city are still a concern or a pressure, decision makers choose to reconfigure the elevated urban highway in another way in order to keep the flow of traffic but lessen the built environment impacts. The reconfiguration option is normally chosen when fixing an elevated highway demands high costs, and the traffic flow is really high to the extent that it is easier to rebuild it in another form. One way to do that is to construct a sunken highway which is below the normal street level to mitigate sound and exposure impacts. This option still cut off neighborhoods (people cross it over only from bridges). Some cases choose to sunken the highway and then deck it by putting a roof over it so that they can use the surface for other activities like parks. This option decreases pollution and noise and at the same time increase property values. The city of Dallas went for this option and constructed a linear park over its sunken highway (Ebeling, 2013). Another option is relocating the highway this is often done when the traffic flow has changed through time or if there is an urban revitalization in the old location. Yet still Relocating the elevated highway simply relocate all its problem to a new location. It does not solve anything. Rod Island, for example, is relocating its highway to a less dense area to free 20 acres of valuable lands and provide access to its waterfront (Ebeling, 2013). The last option is rebuilding the elevated highway in the form of an underground tunnel. This option shifts the traffic underground so it lessens the impacts on the surface and frees the surface land for redevelopment but its initial costs are very high. In Boston, policy makers choose to turn the highway into a tunnel (known as the Big Dig) to unlock millions of real-estate value for properties that were depressed by the original highway (Ebeling, 2013).

The Third option, and perhaps the most feasible one does not focus on eliminating the highways but focus on eliminating its negative impacts. This solution tries to rehabilitate highways and the spaces underneath them, reconnecting neighborhoods through the lost, dark spaces under elevated highways. This option in areas where changing the traffic flow is a challenge that cannot be met with alternatives and budgets are limited therefore options to deal with the highway are limited to materializing its new potentials (Bauer et al., 2015). With the intensive city urbanization, high real estate values, and high-value locations that are occupied with highways, entrepreneurs saw potentials with the spaces under highways. “Airspace” is a term used to describe an area located under or over an elevated structure such as an elevated highway (Savvides, 2004). New initiatives focus on extending the urban fabric over the empty spaces under elevated highways, turning them from spaces that used to divide neighborhoods to spaces that reknit neighborhoods. Such idea is

not only to absorb the impacts of the elevated structures but is driven out of the scarcity of developable land in urban areas. Such scarcity of land makes the area under the elevated highways an attractive potential for forming new urban assets (Savvides, 2004).

An initiative in New York City titled “under the elevated” created an innovative program to manage and enhance space under elevated structures (Bauer et al., 2015). After noticing that there are over 700 miles of elevated structures in New York that often offer mobility to people riding vehicles and darkness to streets below them, the initiative reintroduced the spaces under the elevated structures into community assets (Bauer et al., 2015). Redesigning and revitalizing spaces under the elevated highways with activities can increase property values, offer better access to retails and shops, eliminate informal uses “increase safety” and offer long term amenities for communities. As it was discovered that the space under the elevated structure offers diverse opportunities to showcase new initiatives, recreational and public spaces. The initiative in New York focused on finding potentials in the space, the land, the structure and location of each area under the elevated highway. Rehabilitating the spaces under highways, though it does not offer a final elimination of the highways impacts, it offers great potentials to communities around it. Initiatives introduced in New York varied between local markets to revive economic activities, galleries, public spaces to increase community assets, sound absorbing panels and vertical gardens to lessen noise and air pollution (Bauer et al., 2015).

The three urban solutions that emerged in different countries was a trial to absorb and shift the long-lasting impacts of the elevated highways. As the removal of highways will most probably be a way to combat all the impacts, it cannot be done without offering new traffic alternatives especially in critical locations. The reconfiguration option whether it is turning the elevated highways into a tunnel or relocating it can only combat some of the major impacts. The reconfiguration option requires high budget but it is a feasible option in areas that needs to assure a flow of traffic. Reconfiguring a highway in another location or in other forms can reconnect the land from above, or free valuable lands, decreasing noise and air pollution. Those two solutions cannot be conducted without a high budget, and high community and political support. Due to the above reasons, removing or reconfiguring a highway is rarely seen in the developing countries context or in the Middle East. The rehabilitation option though does not offer drastic change yet it offers potentials to reduce sound and air pollution, offer new urban spaces and reconnecting the

area. With low budgets and without threatening mobility, rehabilitating areas under the elevated highways may sound as the most feasible way to absorb part of the impacts of highways on the impacted communities while offering new potentials. The application of the rehabilitating option focuses mainly on the quality of the space, through reclaiming a space and reconnecting it which touch upon many urban theories.

2.4. Urban Theories

Many urban theories over the time pointed out the importance of different urban spaces and specifically the lost spaces that are not defined but can be assets; *The Practice of Everyday Life* (Certeau, 1988) and *Finding Lost Space* (Trancik, 1986). While other theories discussed the notions of ownership when it comes to undefined spaces in the city; *A Theory of Good City Form* (Lynch, 1981) and *Space and Typology of Toleration* (Chiodelli & Moroni, 2014). Such theories can be a good base to start discussing the elevated urban highways and the urban spaces created under them.

2.4.1. The Practice of Everyday Life: Michel de Certeau 1988

Michel de Certeau (1988) pointed out how there is a huge difference between planning cities from above and how the human being actually uses the city and walk in it developing different spatial practices. In his influential chapter “Walking in the City” Certeau explains how city planners see the city from a panorama perspective, failing to realize the “down below” spaces (Certeau, 1988). Certeau criticizes the act of flattening the city urban data in plane projections as this leads to missing the below spaces that the users take the greatest advantages and opportunities in. The theory explains that the functional administration differentiates and distributes different parts of the city and then rejects any space that was not dealt with in such way, producing a waste product space that is forgotten and becomes a blind spot within the city. But according to Certeau the users of the city and the spatial practice of the urban life can allow the reemergence if those spots and can secretly structure the spaces that the urbanists have excluded through their constructed order. Certeau points out the potentials of those lost spaces in weaving the city together and how the users have managed to make use of those undefined, unseen spaces. Forming a reaction between the constructed order by the planners and the spatial practices by the users and how the spatial practices have managed to punch and torn and then weave such order(Certeau, 1988).

The spaces created under the elevated urban highways are a reflection of such theory where planners plan from above and allocate huge structures with the fabric of the city to solve mobility problems, ignoring the spaces that are created under such structures. Certeau’s theory open the door for the possibility of studying the potentials and possibilities that can be created under the elevated urban highways, the spaces that host the practice of everyday life, and ultimately the spaces that can weave back the city fabric.

2.4.2. A theory of good city form: Kevin Lynch 1981

In his book, *Good City Form*, Kevin Lynch proposes the principals of spatial rights and control that affects the goodness of a place (Lynch, 1981). Marking out the spatial rights of spaces as substantial when discussing the spaces under the elevated urban highways due to the vagueness and undefined nature of such spaces. In his theory Lynch marks out how people usually focus on one type of spatial control which is the legal ownership of the space. This leads to often disregarding the other forms of control that may appear in a space leading to various types of conflicts between different users. Therefore Lynch proposes 5 principle rights of spatial control that are discussed below (Lynch, 1981).

The right of *presence* is the first right discussed which is basically the right to be in a place and whether this right gives you the authority to exclude others from using the same place. In the case of public spaces people usually have the right to be in the space without having the right to keep other people off the space. The right of *use and action* is the second right proposed by Lynch, which touches upon the behavior and use of a certain space. The common regulations for the use of public space that is undeclared but known among all users of the space. The right of *appropriation* discusses the monopolization of the benefits and resources of the space that will not allow other users to make use of the same benefits. The right of *modification* tackles the right of altering the space and doing permanent modifications on public spaces to match the new uses and functions of the space. The right of *disposition* which is the right of transferring your rights to other users indicating that this form of right is permanent and even transferable (Lynch, 1981).

Marking out such variations of spatial control is important as they are usually summed in one definition which is ownership. Such definition should be expanded to include other future uses and potential users of a space specifically in spaces under the elevated urban highways that is not defined but offer a lot of potentials to various uses and users.

2.4.3. Finding lost space: Roger Trancik 1986

Trancik (1986) talked about the problem of lost urban spaces or the inadequate use of spaces in his book “finding lost space”. Trancik criticized how planners take decisions regarding the urban setting from a 2-dimensional perspective which often leads to unshaped anti-space (Trancik, 1986).

“They are the no man’s lands along the edge of freeways that nobody cares about maintaining, much less using” (Trancik, 1986, p.3)

Trancik (1986) puts the responsibility on the new urban professionals to redesign lost spaces that have emerged over the last 5 decades due to the ill master planning of objects on the landscape. Trancik describes how every modern city has a big amount of undefined spaces that turns to unused spaces and this is often the case along highways, railroad lines, and waterfronts. Trancik lists five reasons behind the occurrence of the lost spaces in the modern urban setting and the number one reason was the increase of dependence on the automobiles reflected in building more highways. Trancik describes how such spaces creates major gaps that interrupt the general continuity and flow of the city. Where the solution lies in identifying these gaps in spatial continuity, then fill them with new spaces of opportunities that will generate new investments(Trancik, 1986).

“Generally speaking, lost spaces are undesirable urban areas that are in need of redesign-anti-spaces, making no positive contribution to the surrounding or users. They are ill-defined, without measurable boundaries and fail to connect elements in a coherent way. On the other hand, they offer tremendous opportunities to the designer for urban redevelopment and creative infill and for rediscovering the many hidden resources in our cities” (Trancik, 1986, p.4)

Trancik defined three approaches that if taken together they will lead to a better integrated urban design. The first approach was the figure-ground theory which focuses on the patterns of solid and void, the second approach was the linkage theory which focuses on the lines connecting different elements and the circulation, the third approach was the place theory which focuses on the social and cultural value of the place along with the visual perceptions of the users. Trancik claims that in the process of reaching a better urban design setting one must design in response to the three interrelated theories (Trancik, 1986).

2.4.4. Spaces and Typology of toleration

Chiodelli and Moroni (2014) discuss typologies of spaces and public toleration which is very relevant when analyzing spaces under the elevated highways as such spaces remain undefined which open up a lot of control and ownership problems. Chiodelli and Mornoni categorized spaces but did not limit it to only public and private. They categorized the publicly owned spaces into three types, *stricto sensu* public spaces, *special* public spaces, and *privately run* public spaces. In the *stricto sensu* spaces all types of access and behavior are generally tolerated, in the *special* public spaces, access and behavior that is in conflict with the specific function of the space is

restricted, in the *privately run* public spaces access is regulated by the law of the specific space (Chiodelli & Moroni, 2014).

A lot of literature discussed the concept of public and private spaces, but who owns and manages such spaces is rarely considered. Dealing with space as a property with its complex relations that links between its structure, role, function and nature is a new way of discussing spaces. Chiodelli and Moroni (2014) placed three fundamental elements in relation to space which is a boundary, claim, and control. The boundary discusses the contour of the space owned, the claim deals with the right of ownership, and the control is concerned with the right to make decisions regarding space (Chiodelli & Moroni, 2014). In a context similar to spaces under the elevated highways there is a continues battle of claiming ownership and control, the undefined nature of such spaces increase the tension and vagueness of ownership and control rights. Therefore, it is crucial when discussing and analyzing such spaces to bear in mind its boundaries, control, and ownership.

The four theories discussed above draws attention to the wider perspective of having an elevated structure passing by any urban fabric as they touch upon lost spaces, control, ownership, and types of public spaces. Such topics need to be concerned when dealing with any urban case of the elevated highway. As the highway not only cuts through a community and create various impacts, it also creates new spaces and new perspectives of ownership and control.

2.5. Elevated urban highways in Greater Cairo and related policies

After going through the literature it is clear how elevated urban highways status developed internationally from a positive urban element to a negative urban element, and how different urban responses and theories were developed based on it. The coming section reviews how elevated urban highways developed in the Middle East and in the Egyptian context in particular.

Early realizations of the negative impacts of the elevated urban highways in the developed countries did not stop some countries like Egypt to carry the same policy. Deboulet (2010) argues that Middle Eastern cities have implemented urban highways as a way of bringing prestige and branding modernity. Deboulet explains that urban highways in cities like Cairo, Tehran and Beirut altered the social and environmental setting of the cities. The construction of urban highways is used by Middle Eastern governments as a substitute for urban policies that cannot cope with urban growth (Deboulet, 2010).

In the 1960s Cairo suffered from saturation in its road networks, high population densities, over-charge sewage networks, all leading to the proposal of the 1970 Cairo strategic plan (Sutton & Fahmi, 2001). Since the plan proposed new satellite towns to absorb the population, it proposed to enclose the urbanization by two circular ways, radial ways, and highways crossing traffic areas. The road system aimed to improve the traffic situation by using bridges to cross over the crowded roads in the city. In 1973 work started by constructing The 6th of October Bridge a 6 km elevated highways crossing over the old city and linking between Mohandeseen zone and the airport zone (UN Habitat, 1993). Sutton and Fahmy (2001) note how the highways were the center of the 1970 Cairo strategic urban plan. As policy makers were expecting strong population growth, they focused on building satellite cities around Cairo and connecting them with highways. The idea of building the first ring road in Cairo was initiated in the 1970s and appeared in the 1983 plan conducted by the French planning institute IAURIF. The plan initiated outer ring road to contain the urban sprawl and new bridges to connect the eastern and western parts of the city (Sutton & Fahmi, 2001). From 1970's till now Cairo proceeded to build elevated urban highways that connect between different neighborhoods. Sims (2012) notes in his book "Understanding Cairo: a city out of control" that the complex network of elevated urban highways acted as a blanket that was exclusively executed to serve car owners. Sims also notes that the network of urban highways was developed as a tool to allow access to the newly trendy developed satellite cities, where policy

makers decided to ignore old cities and discard the surface and public transportation in order to invest in a network that aims to improve access to the new towns (Sims, 2012). Huzayyin and Salem (2013) in their study of urban growth and the transportation demand and supply, noted that the road network focused on a variety of hierarchy roads from elevated expressways, flyovers, and underpasses. Huzayyin and Salem note that Cairo achieved a lot in mitigating traffic problems and one of the main achievements are the elevated road networks. Yet still Cairo is currently suffering from congested corridors and traffic delays. Though the elevated road networks improved access, hence generated more traffic but their impact in reducing congestion cannot be denied (Huzayyin & Salem, 2013).

Deboulet (2010) explains how highways appeared heavily in the 1980s and 1990s as a sign of modernity. Massive road infrastructure helped to lessen the congestion but reflected a clear intention of escaping the popular old districts in Cairo. Deboulet notes how an impressive number of elevated roads was created in the last 20 years to pass over the crowded medieval old cities in Cairo (Deboulet, 2010).

S. and K. Cullinane (1995) in their article about car ownership in Egypt note that a big amount of aesthetically pleasing buildings were destroyed to make space for roads, tunnels, highways, and flyovers. Cullinane gives an example of Tahrir and Ramses squares, and how the chaos of concrete generated by the traffic engineers destroyed their built environment and landmarks. Cullinane (1995) argues that the whole Cairene population suffers from a low quality displeasing built environment that was destroyed and now characterized by flyovers to serve the small portion (compared to the rest of population) of car owners². Cullinane criticizes the Egyptian urban planners for not considering pedestrians giving an example of Tahrir square and how it can be easily noticed that the flow of pedestrians was totally ignored. Cullinane blames policymakers for choosing to invest in costly car infrastructure that serves a portion of the population instead of public transportation that serve most of the population. Cullinane states that with time policy makers will realize the chaos that they have created in Cairo in the name of development but it will be too late to reverse the urban planning policies (Cullinane & Cullinane, 1995).

² With a population exceeding 9.5 million in Cairo according to 2016 CAPMAS statistics, there are 1.6 million private cars registered in 2016 (CAPMAS, 2016)

Urban initiatives like Tadamun (2013) notes how the construction of elevated urban highways like the sixth of October elevated highway completed in 1996 have radically changed the fabric and also destroyed a lot of what used to be decent open spaces like Ramses square (Tadamun, 2013). Tadamun linked between the impacts of the Six of October Bridge and Robert Moses elevated highways plans in New York, and how they both leveled communities and destroyed public spaces.

Another area that was cut through by a mostly elevated highway was Mohandesin and Miet Okba. The 26th of July corridor was an old suggestion to link between the city center, Zamalek and Sixth of October new settlement. The idea took some time to become an actual plan because it needed to pass through Miet Okba area which did not belong to the Ministry of Waqfs and the inhabitant refused to sell their lands (Keller & Polach, 2010). The transit corridor was finally built in 1998 passing through Miet Okba, with most parts built as an elevated highway, but the urban planners decided to build the part going through Miet Okba as an underpass to avoid “balcony shops” that can slow down the traffic on the highway (Keller & Polach, 2010). A Large portion of Miet Okba was demolished (over 400 apartments) in order to construct the 26th of July corridor, the corridor led to splitting Miet Okba into two halves (Tadamun, 2013). A wall was built to separate between Miet Okba and the 26th of July corridor leading to limiting access to it. Divining Miet Okba into two separated between the services and the residential areas, for example, Miet Okba market suffered economically after building the 26th of July corridor due to limiting its accessibility (Tadamun, 2013). The construction of the 26th of July corridor can be seen as a bless to car owners commuting between Downtown and the 6th of October city but it is an economic, environmental and social curse to the neighborhoods that it passes through.

After years of adopting a policy that supports the construction of elevated roads and highways, Egypt is now left with 700 bridge that passed their estimated life span and is at risk based on a study conducted by JICA (El Sharnoubi, 2014). The lack of infrastructure maintenance plan lead to the deterioration of the elevated structures. The overlapping of responsibilities between different authorities; namely the local authorities and the General Authority for Roads, Bridges & Land Transport (GARBLT), are complicating the decision-making process. As decision makers prefer to build new bridges to be added to the list of their accomplishments instead of maintaining the current ones, the maintenance projects were at the bottom of their priority. This led to the deterioration of the elevated roads threatening the safety of their users and the surroundings. After

many accidents and the JICA report that announced the danger related to leaving the elevated roads without maintenance, GARBLT reconsidered the importance of maintenance. GARBLT announced that maintaining the elevated bridges and highways is currently on the top of its priority as the government does not have the financial means to rebuild them or entirely change their structure. While elevated roads form a current need to keep the flow of traffic currently in Egypt maintaining them is a must to protect them as an asset to the already struggling Egyptian mobility network (Kamel, 2016) .

With all these problems associated with maintaining the already existent road network, the new policies that target roads and transportation are still taking the same approach (GOPP, 2009). In the Strategic Urban Development Plan for Greater Cairo Region 2050, the plan focuses on creating and upgrading road networks and speed corridors. The plan proposes the creation of 1000 km of roads in the format of 14 new highways to link the inner and the outer areas of the region of Greater Cairo. The plan also proposes the creation of 3 more ring roads inside Cairo adding this to the existing ring road and the regional ring road as shown in figure 3 and 4 (GOPP, 2009).



Figure 3 proposed and existing ring roads of Greater Cairo (GOPP, 2009)



Figure 4 Proposed and existing highways of Greater Cairo (GOPP, 2009)

More specifically The Greater Cairo urban development strategy that was published in 2012 points out how Greater Cairo streets are suffering from overcrowding and constant traffic jams (GOPP, 2012). The plan also mentions that the elevated urban highways are carrying far beyond their estimated maximum capacity, as 6th of October bridge is carrying twice its capacity and 15th of May bridge is carrying 1.5 its maximum capacity (GOPP, 2012). The plan proposed building and improving GCR road networks. The goal was an expansion of highways and ring roads that meet and cuts through the center of the urban mass. Out of the road upgrading plans, the plan also proposed 170 Km of New urban highways.

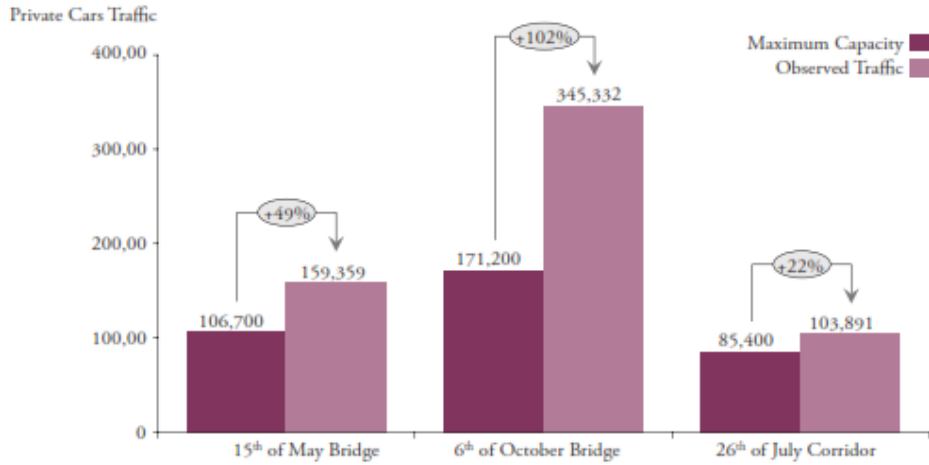


Figure 5 high traffic rates over Cairo's elevated highways (GOPP, 2012)

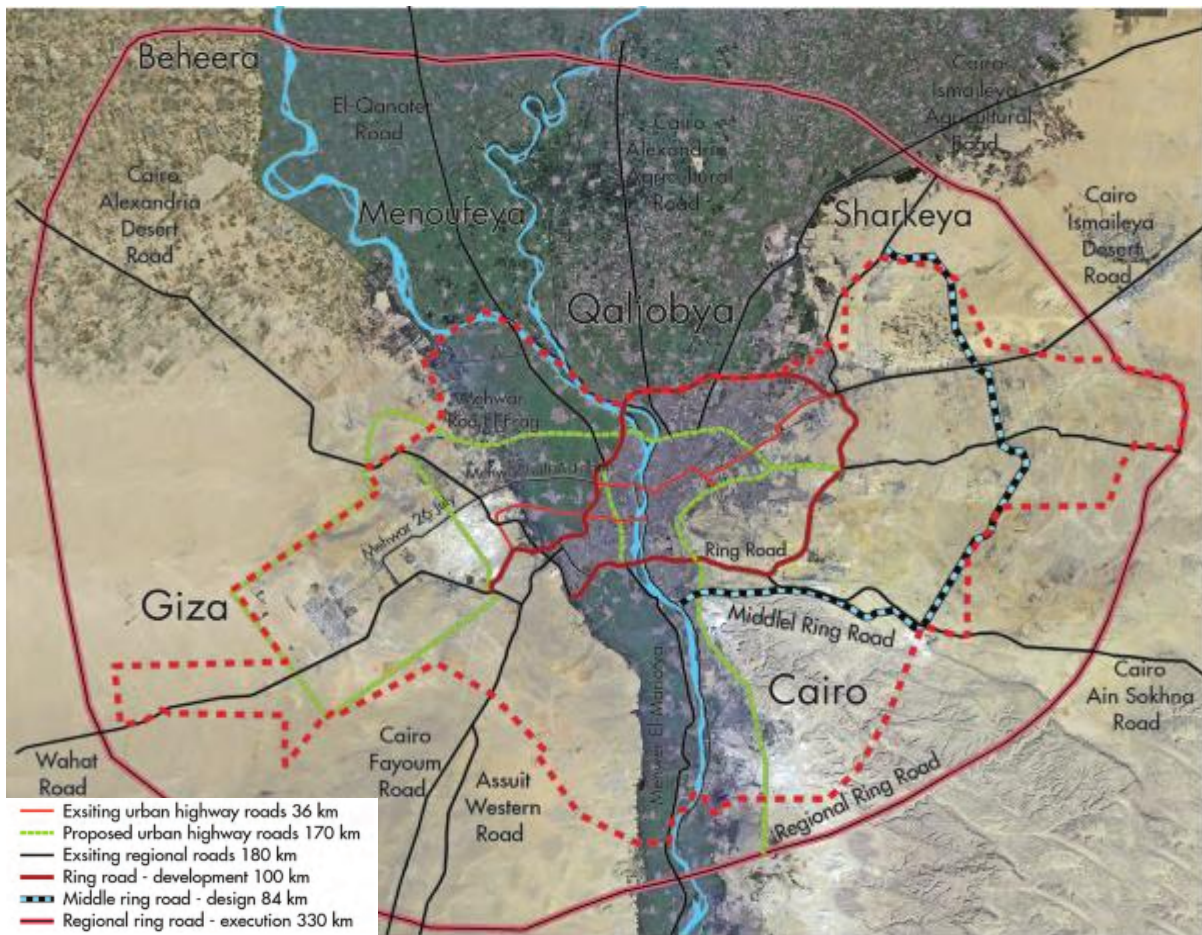


Figure 6 existing proposed road networks (GOPP,2012)

The focus on the road network development comes from the need of easing mobility to the residents of Cairo to face the rising number of travel trips and car ownership. It is important to keep in mind that for sure a big percentage of the planned highways and ring roads will be elevated since they will be passing over existing urban fabric. Which will lead to the creation of more blighted areas and dead spaces in the middle of the city, along with their vast social, environmental and economic impacts. The national urban strategies all state that Cairo is struggling from continuous traffic congestions but the solutions do not seem to be focusing in one direction yet they appear to be distracted between the public network capacity and increasing the roads' capacity.

Although the elevated urban highways in Cairo is seen as a road web that negatively impacts the neighborhoods that they pass through, its presence is still a need to maintain a minimum flow of traffic in Cairo. The chronic traffic and financial disabilities limit the urban options that can be adapted when dealing with aging elevated highways. As the option of removing or reconfiguring the elevated urban highways in new forms in Egypt may not be applicable due to the traffic and financial limitations. This limits the decision maker's option into only one option which is the rehabilitation of existing elevated highways. Current Transportation policies vary between extending the road networks and investing in public transportation. Such political urban approaches and the lack of local literature that discuss the various impacts of elevated highway on Egyptian communities are all contributing to consistent yet unconscious decisions of building more highways. This all proves that the notion of elevated urban highways in Cairo especially needs to be drastically rethought and reconsidered.

This literature review aimed to give a brief notion of highways, particularly elevated ones, and how they developed internationally from being perceived as a positive notion to a negative one. The aim of mentioning the negative social, environmental, and economic impacts of the elevated urban highways was to make the reader aware of the vast negative impacts of the elevated urban highways that are rarely mentioned in the local literature. Understanding such impacts may lead to reconsidering many new elevated highway projects in Egypt and recruit the public opinion against the elevated urban highways, hence directing responses to traffic congestion towards improving the public transportation. Discussing the newly emerging urban solution when dealing with elevated urban highways lay down new options of planning the future of elevated urban

highways in Egypt. Though options like removing or reconfiguring the elevated urban highways may not be currently considered in the Egyptian situation, understanding such option and their implications can lead to better planning in the future. Understanding different urban theories that focus on the potentials of forgotten urban spaces can lead to better design options that can emerge through rehabilitating the existent network of elevated urban highways. Though there are few urban examples that rehabilitated spaces under elevated urban highways, the idea is still emerging in Egypt. Overlapping of stakeholders, different authority entities and understanding the different needs of the community can all be an asset to the emerging trend. Understanding the existing impacts of the elevated urban highways on the community, how the impacts differ from one area to another, and emerging uses of spaces under the elevated urban highways can be turned into potentials for the future planning decisions.

The next part of the study aims to study different cases of elevated urban highways in Egypt through understanding their impacts on the community and the potentials that they can offer through providing new spaces in the community. The study presents three cases of in-depth field studies of elevated highways in Cairo, in which each of them was built in a different era and within a different urban nature and social structure. The variations of circumstances between each case are predicted to lead to a variation of impacts and potentials within each case. Such study presents a set of diverse and valuable insight on the case of elevated urban highways in Cairo.

Empirical Fieldwork methodology, analysis, and flow

The first part of the research which included a review of the international literature, emerging urban solutions, and different urban theories all guided the empirical part of the research. With the aim of studying different case studies within the local context emerged important questions that reflect upon the literature review. The first question reflects on the different impacts of elevated highways. As the literature provided the research with a pool of different impacts, the empirical work aimed to verify such impact. Which international impacts exist in a local context? Which does not? And what new impacts can the local context present to the literature? All such questions will be answered within scoping the impacts of each case study.

The different urban solutions that emerged within the international context also poses new questions within the local context. As it was reflected in the review different countries are opting for the choices of removing and reconfiguring the elevated highways, but will such options be feasible within the local context? Which urban solution can be applicable in each of the local cases and under which conditions? The empirical work will not aim to choose a definite urban solution for each case but will review what factor can impact each option. The empirical work will also try to detect which type of activities can emerge within the rehabilitation option. The answer to such questions is a form of screening to ideas for spatial uses and future projection that can emerge from each case.

The urban theories discussed in the literature provided basic ideas of analyzing the spatial potentials within each case. The empirical work followed on De Certeau's (1988) suggestion of using such spaces to reconnect the fabric. Such theory imposed a question of spatial potentials within each space. Lynch's (1981) analysis of spatial rights also guided the empirical work to ask questions of ownership, control, and maintenance responsibilities within the spaces under the highways. The empirical work tries to pinpoint who claims the rights of *presence, use and action, appropriation, modification, and disposition* in each case. The research also draws ideas from the parameters used in Baer's (2015) New York initiative "Under The Elevated" by trying to find potentials in the space, land, structure and location of each case.

The empirical work was conducted in three different case studies. The reasons behind specifically choosing these cases lie with their diversity and the variety of information that they present. The

first case is El Azhar Bridge, the second is 15th of May Bridge, and the last is Saft El laban Corridor. Each case was built in a different time period, different district type and in different socio-economic community nature. In a research that aims to scope different impacts and map relations, such diversity will be really helpful. Other potential cases on a bigger scale like 6th of October Bridge and parts of the Ring Road were eliminated as they pass through different neighborhoods and districts making it harder to generalize the urban nature and socioeconomic status of the case.

27 in-depth interviews were conducted within the field work. A number of 21 in-depth interviews were conducted by using a snowballing technique with community members that are in direct relation with an elevated highway. 7 members of each community were interviewed, this number was based on the first case study in which the snowball technique stopped being efficient over the seventh interviewee. At this stage, no additional insights seemed to be collected therefore the sample size reached saturation after the seventh participant. The sample size was then applied equally to the following two case studies. In addition, 6 more in-depth interviews were conducted with field experts.

The identity of all participants is to remain confidential to help establish trust between participants and the researcher. Confidentiality was used as a way reassuring interviewees that they can reflect their insightful observation without being tracked for follow-up on their opinions. Letters and numbers were used as a key to replace the names of the participants where the letter represent the Case and the number represent the order of the participant in the exact case (A1, A2, S2, S3, Z4, Z5). Where A represent El Azhar area, S represents Saft El laban area, and Z represents El Zamalek Area. For the interviews conducted with urban Experts, the letter E will be used.

The complete list of interviews conducted and the interviewee profile, initials, code and date are presented in appendix A.

Chapter 3: El Azhar Bridge³

4.1. Background

El Azhar Street is the main modern route that cuts through Fatimid Cairo which used to be the capital of Islamic Egypt around the 10th century. The area is very rich in terms of culture and historical monuments but also for its famous local markets that contain Cairo's most important wholesale markets and traditional shopping areas (Khalil & El Moamen, 2005). The presence of famous markets in the area has long threatened the historical monuments in the area, due to the presence of marble and wooden workshops and crafts which developed to be a problem in terms of noise, waste, and pollution. Forming one of the most important markets in Egypt El Azhar area attracted a lot of tourists and daily flow of local visitors. The daily flow of visitors and merchants caused a chronic traffic congestion in the area. The central location of the area which connects to different neighborhoods of Cairo exposed the area to a daily flow of passerby traffic. All this along with a decaying housing stock and inadequate services helped in locating this area in the center of the government development plans in order to preserve its historic and market assets and improving means of internal circulation and accessibility to the area (Fahmi, 2012).

In the seventies of the last century, the government decided to build a two level steel elevated highway over El Azhar Street to solve the traffic congestion of the area. The highway which is commonly known as "El Azhar Bridge" was to connect El Darrasa eastern of El Azahar with the city center of Cairo. The main Purpose of the bridge was providing a direct connection between downtown and new high-end areas reached by Salah Salem; namely Heliopolis and Nasr City, by bridging over the congested areas of El Azhar. The bridge was built in the beginning of the eighties transferring the traffic flow coming from El Opera Square to Salah Salem road and vice versa in addition to keeping the on the ground route (Khalil & El Moamen, 2005).

³ The Elevated urban highway of El Azhar is commonly known in official reports and between the public as " El Azhar Bride" therefore the research will proceed by using the term "El Azhar Bridge" instead of the term " the elevated urban highways of El Azhar"



Figure 7 El Azhar bridge shaded in Orange cutting through the dense fabric (Map retrieved from Google Earth,2016)

During the nineties of the last century, new rehabilitation plans for the area appeared. As the area experienced a lot of changes since the construction of the bridge which changed most of the land uses from residential to commercial activities. The heavy traffic on the bridge and the street level developed serious environmental consequences on the monuments of the area adding to the air and noise pollution (Khalil & El Moamen, 2005). Given its high touristic and cultural potentials El-Azhar area was reconsidered in the rehabilitation plans of the nineties with a proposal to build a road tunnel in the area. The main objectives of the tunnel were:

1. To provide an efficient underground means of transport
2. To create a free vehicular surface to enhance tourism and pedestrian activities.
3. To reduce the air and noise pollution on the ground surface.
4. To enhance the appearance of the area by providing a flow underground thus offering an option of removal for the elevated road (Khalil & El Moamen, 2005).



Figure 8 El Azhar Bridge cutting between the buildings (personal photograph by author. 9. Aug.2016.)

Construction of the tunnel started in 1998 constructing two parallel tunnels connecting Salah Salem Street to El Opera square. Each tunnel is allocated for one traffic direction and consisting of two traffic lanes. Construction of the two tunnels lasted till 2001 with a length of 2.7 Km each (Burns & Novelli, 2008). Though the original plan was removing the elevated road of El Azhar after constructing the tunnel but this never happened. As the removal ideas were joined with a plan to turn El Azhar Street into a pedestrian street and such ideas were not welcomed by the wholesale merchants of the area. El Azhar is known to be an outlet for traditional materials, crafts, textiles, gold and wholesale markets, therefore the idea of closing the street to car traffic will impact the traditional markets and crafts. The retailers shops expected that they will lose their clients if they cannot be reachable except by foot (Burns & Novelli, 2008).

The Minister of Culture from 1987 to 2011 “Farouk Hosny” pushed for the removal of El Azhar elevated road in order to revive El Azhar area as a touristic and cultural area, but many voices were against that (El Dakhakhny, 2008). As experts expected traffic paralysis upon the removal of the elevated road. Experts pointed the fact that the tunnel is not a replacement of the elevated road as the elevated road is used in local trips inside the area while the tunnel is only for passersby between old Cairo and the eastern side (Tamam & Abdelmeneim, 2005).

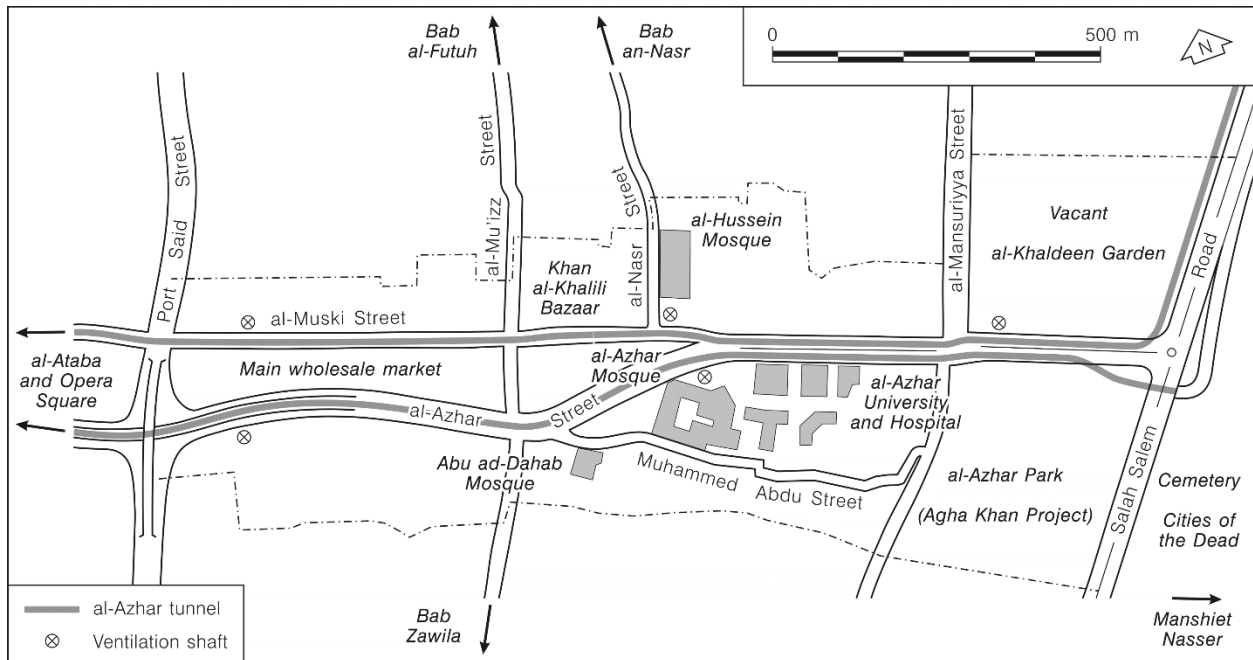


Figure 9 El Azhar Tunnel drawing (Fahmi, W.; Sutton, 2003)

Experts pointed out that the tunnel closes regularly for security reasons, it is only 2 lanes so in the case of any accidents inside it, the whole traffic flow in the Downtown area will be paralyzed, therefore the presence of the elevated road is a must. Other experts pointed out that removing the elevated road will cost the country more than 10 million pounds, while with its current condition the elevated road is worth more than 600 million Egyptian pounds (Tamam & Abdelmeneim, 2005). Small trials from the government trying to close the elevated road for a couple of weeks to see how it will impact the traffic flow proved that the idea of removing the elevated road without offering alternatives is not applicable to the current traffic conditions. With the voices and objections of traffic experts, wholesale merchants and other stakeholders of the area plans of removing the elevated road seemed to be postponed until further notice (Tamam & Abdelmeneim, 2005). The Controversy of keeping or removing the elevated road of El Azhar is still present to date with opposing views of the pros and cons of the presence of such structure in a critical area such as El Azhar.

4.2. Selection rationale

The selection of El Azhar elevated road as one of the case studies was due to three main reasons. First, the different nature of the area as it lies within the heart of old Cairo, rich with cultural and

historical monuments. Such location open discussions related to the flow of the city center versus revival and restoration of old city fabrics. Second, it hosts many manufacturers and wholesale markets selling products that are not offered in any other market inside Cairo. This open discussion about the importance of the area as an economic base and the vitality of traffic flow to the nature of the community. Third, the case of El Azhar is the only case where discussions of removing the elevated road is already present. Options to reconfigure the flow were already established (The construction of El Azhar Tunnel as a replacement to the bridge) this open the discussion of whether reconfiguring options are applicable in such conditions or not.

4.3. Scoping Impacts

Field work done in El Azhar area was of different nature than the following two case studies. As all of the interviewees already had a background on the contradicting government plans of whether they should remove the elevated highway of El Azhar or not. Such background directed most of the informal discussions into the importance of such structure in the area rather than scoping specific impacts. Though the variety of responses gave new depths and perspectives to scoping the impacts and potentials of such structure.

All of the interviewees pointed out the importance of the elevated highway of El Azhar (or as they call it “El Azhar Bridge”) to maintain the inner flow of the City. When trying to scope the impacts of El Azhar Bridge on the area few impacts were scoped yet some of them led to wider impacts on the community of El Azhar.

The first complaint reflected wider implications of impacting the social fabric of the area. It was related to noise, traffic, and privacy of residents of the area. Though it was pointed out that the population of the area is continually decreasing. A1 who owns a business directly overlooking El-Azhar Bridge stated that he used to live in the area but the increase of traffic, noise and lack of privacy forced him to move out. A1 stated that the presence of the bridge doubled the noise that the apartments are exposed to, and still the streets are always jammed causing much noise all the time. Also, the elevated level of the street seemed to be very intruding to the privacy of his apartment. All this pushed him to leave the area while he now spends an hour and half of transportation daily to reach his store. A1 proceeded by stating that most of the original residents who could afford to move out of the area did because of the traffic, noise and the poor infrastructure. A1 pointed out that most of the apartments overlooking the main streets are now

turned into storage areas for stores on the ground floor. With this conclusion, A1 stated that this area is now a fully commercial area, and it is an important commercial base to the economy and this factor will override discussions related to urban quality and other similar topics.

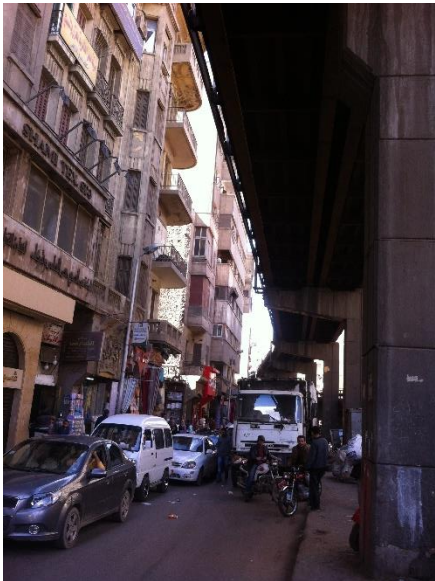


Figure 10 relation between the highway and the buildings (personal photograph by author. 9. Aug.2016)



Figure 11 floors overlooking the bridge turned to commercial and storage areas (personal photograph by author. 9. Aug.2016)

On the other hand, A5 a resident of El Azhar area who also works in a store overlooking the main street did not quite agree with the overriding commercial identity of the area. A5 stated that El Azhar Area is a culturally rich area full of monuments. For A5 the biggest impact of El Azhar Bridge is destroying the cultural identity of the area and turning it into a commercial base. A5 stated that the embodied value of the monuments in the area is much more worthy than the wholesale markets and flow of transportation.

While discussing the relation between the presence of the bridge and its economic impact on the market A4 stated that the bridge did not negatively impact the market. As A4 expressed that El Azhar area is a strong independent economic base so whether the bridge is in the area or not it will not impact the rate of selling. A4 described the area as not being dependent on passerby's traffic so shifting the flow of traffic would not impact the area. A4 pointed out the presence of the bridge is actually good for the stores as it lifts the traffic of people who are just crossing over the area leaving the street level for the customers of the area and the trucks to load and unload. A4 explained

that the local street is more important than the elevated one as people like to pass by this area, as it is the center of trade in Cairo so the bridge is only attractive for drivers who would like to pass over, yet the local street is crowded most of the time if compared to the elevated one.



Figure 12 traffic flow over the elevated road compared to the crowded street level (personal photograph by author. 3. Sep.2016)

While pointing out impacts like noise, lack of privacy, dust exposure were the most common complaints, it was stated in all of the interviews that El Azhar area cannot function properly without the presence of the bridge. Many interviews discussed different scenarios that would happen if the bridge was removed and pointed out the positives of having the bridge passing through the area. A1 stated that El Azhar Street is a main axis in Cairo whether it is for commercial reasons or cultural reasons, so the idea of developing it should not be about removing or keeping the bridge it is much bigger than that. A1 reflected on traffic flow, types of cars allowed, street vendors, informal microbus stops, and parking by saying that all these factors need to be involved before just saying let's remove the bridge. A2 stated that the problem is not coming from the presence of the bridge it is a problem of enforcing rules, while the idea of removing the bridge will only damage the area more than it already is.

“Remove the bridge if you want but close the markets and remove the residents in the area too, because removing the bridge will kill the area, it will literally paralyze the area and this is an area that contains one-third of the Egyptian local market, so we actually need a

bridge over the current bridge to decrease the traffic” (A2, Personal communication, August 9, 2016)

A2 and A3 mentioned an incident that happened a couple of years ago. The government decided to close El Azhar Bridge for a couple of weeks and let the traffic depend on the tunnel to examine how this will impact the area. A2 described such incident as a traffic disaster. While A3 stated that it was supposed to stay closed for a couple of months but the traffic conditions went terrible, one could spend 2 hours trying to make a U-turn which forced the government to reopen it after one week. As all of the interviewees stated that the flow provided by the bridge cannot be replaced with the tunnel, as the tunnel is very narrow and closed regularly due to maintenance or safety reasons, therefore, it is always regarded as a secondary option.

A4 expressed that the presence of the bridge in El Azhar area may have some negatives like the high level of noise but at the same time for A4 removing the bridge will cause more traffic which will end up increasing the noise. While A6 explained that the idea of removing the bridge can be applicable but only if accompanied by a set of decisions that change the whole circulation of the area and enforce road occupation rules. On the other hand, A4 stated that as long as the area is open for cars then the bridge is a must, as the traffic is already a disaster on its own, but if there are bigger plans of pedestrianizing the area then removing the bridge can be applicable. A5 agreed on that by saying that it should be a historical avenue as he explained that when the government first tried to close the bridge it was a disaster because it was a single decision while it should have been accompanied by other parallel decisions to maintain the traffic flow.



Figure 13 EL Azhar Bridge relation with "El Kady Yahia Mosque" (personal photograph by author. 11.Sep.2016)

“It is full of historical monuments that are worth much more than what we can imagine, they should remove the bridge and actually remove all the stores that are causing such jam, then revive the street as a touristic attraction” (A5, Personal communication, August 9, 2016)

A6 proceeded by comparing El Azhar Area to Khan El Khalili explaining that it can be turned into a pedestrian area and this will not impact the commercial base of the area, rather the merchants are currently against such idea because they are afraid of any change.

The impacts pinpointed by the in-depth interviews varies from environmental impacts like the pollution and noise to social impacts like the lack of privacy and traffic congestions. Though such impacts may seem to be minor but they have had wider implications that managed to change the whole nature of the area. Diagram 3 is compiled to present the interrelations between different impacts and how it leads to wider impacts. As the increase of noise, pollution and lack of privacy have managed to push a lot of residents to move out of the area. The act of residents moving out have provided more empty apartments to be used as commercial and storage areas. On the other hand, the circulation under the bridge seems to be allocated for slower trips, and the presence of the bridge columns have decreased the capacity of the lower street decreasing traffic flow speed in the lower level. The low traffic speed seems to offer the trucks opportunity to load and unload goods, yet impacting the flow of traffic more. Opportunities for loading and unloading goods, adding to availability for storage and commercial space seems to help in flourishing the commercial identity of the street. On the other hand, all this is negatively impacting the cultural and touristic identity of the street.

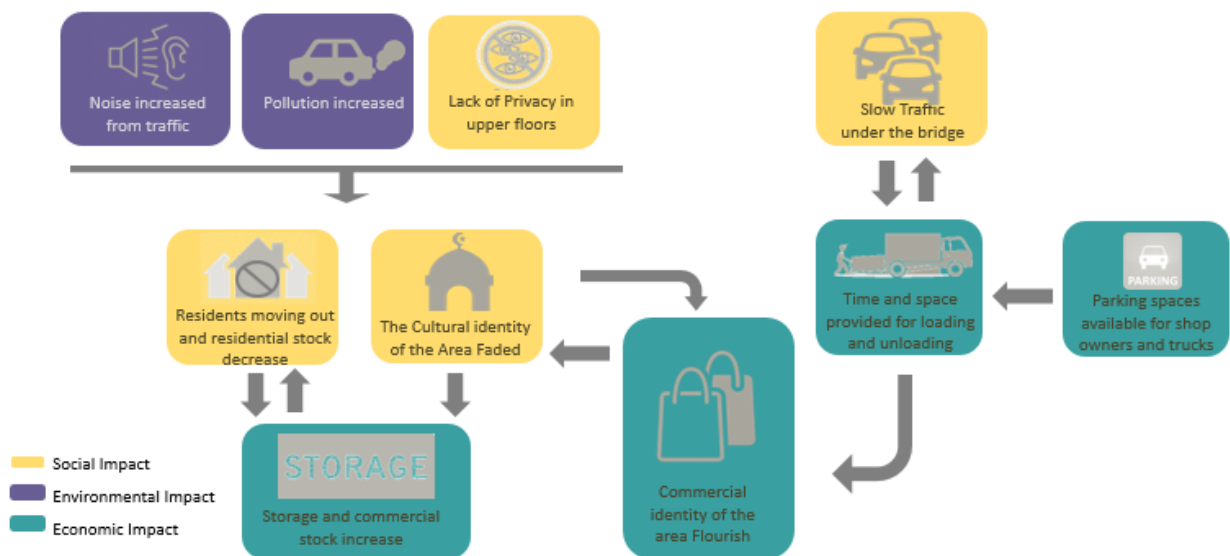


Diagram 3 Scoping different impacts and their interrelations in El Azhar area

The Consequences of the presence of El Azhar bridge verify many of the impacts pinpointed in the literature review, while introducing new consequences that was not mentioned before. Impacts like noise and air pollution, change in the value of properties, change in the local economic activities, and the creation of lost spaces with a negative notion were all verified in the interviews. New impacts that were not highlighted clearly in the literature review were presented like the lack of privacy and an increase in the traffic congestion in the lower level street. The interviewees also pointed out a change in the identity of the area through an overriding commercial identity which was not verified in the literature review. The diagram below highlight with a red dash frame the impacts from the literature review that were verified in the case of El Azhar area, while introducing new impacts that were not highlighted in the literature review. Other impacts mentioned in the literature may be present in El Azhar area but were not verified through the limited number of the interviews conducted in the fieldwork.

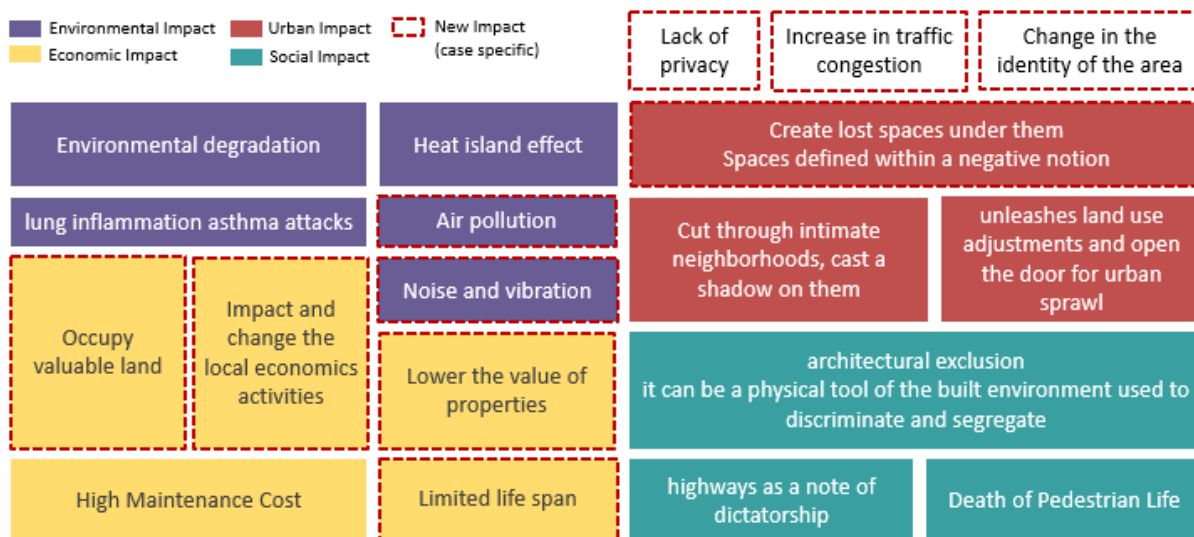


Diagram 4 Impacts verified from the literature review

Through different in-depth interviews conducted in the area, it was clear that the presence of an elevated highway in the area meant a flow of traffic to the community. While imposing any idea of removing such structure from the area was to the merchants a threat towards the traffic flow subsequently a threat to their businesses and their life standards. Only one of the interviewees stated that it is more important to revive this area as a historical and cultural venue than keeping the traffic flow for the sake of business flourishing. To conclude, although some negative impacts were pointed out in most of the interviews like noise and the change of the building uses, but it was seen as a small sacrifice in exchange for keeping the traffic flow. While the presence of a

tunnel was not seen as a replacement or reconfiguration of the flow provided by the bridge. Therefore, the removal of the bridge was only discussed as an option if it will be accompanied by many other decisions or maybe pedestrianizing the whole area.

4.4. Spatial analysis (Location, Space, Structure, land and the Sense of Ownership)

The Case of El Azhar Bridge will always remain controversial and open to discussion between the needs of the stakeholders of the area who demand flow of traffic and those who perceive the cultural value of the area and demand efforts for reserving such area. Though El Azhar Bridge is the oldest of the three case studies and the only one that is subjected to ideas of removal yet within the current public objections such plans seem to be suspended until further notice. Wider planning alternatives could be considered in the long run, like introducing another tunnel north or south of El Azhar Area which can elevate the pressure over the area, and ultimately allow the removal of the bridge. Yet such plans demand a high budget and preplanning and cannot be considered anytime soon. On the short or medium terms, the rehabilitation of the bridge and the area underneath it may seem more feasible. A spatial analysis of current situation may offer ideas of rehabilitation with a focus on potentials that can be offered as a compromise of preserving the flow and reviving the urban quality. The spatial analysis drives from Baer's (2015) parameters (Location, Space, Structure, and Land). while adding to it Lynch's (1981) spatial rights analysis.

The Location of El Azhar Bridge is usually the first point that gets tackled in discussions of removing the bridge, but yet it can be the most important asset of such structure. The location can be associated with an overall negative urban impact. The location of the bridge emphasized El Azhar street as a main spine through cutting El Moez street, deemphasizing the importance of El Moez street. As the bridge is located in a heritage area as announced by the UNESCO. The location is also a prime commercial location famous for different types of wholesale markets and textile trades. The area is rich historically and commercial wise yet always busy with both automobile and pedestrian flow. Such prime location opens a wide range of new potentials in such area and gives a great value to every single m² of land. Whether it is an initiative that touch upon the historical and cultural value of the area, or something that serves the market venues in the area or somewhat form a dialogue with the flow of pedestrians. The prime location of the elevated structure in El Azhar is for sure it's more important asset and open a range of varieties and possibilities.

Space; is the physical attribute Z axis (height) of the site beneath El Azhar Bridge. The height ranges throughout the length of the Bridge. As the bridge split into two heights with a slightly lower height for the cars heading towards Opera square and the other for the opposite direction. The low decks though limit the potential uses of the space yet gives a human intimate scale to space which might offer a space for human uses. Through the site visits, scattered chairs and people sitting were noticed under low height decks areas, where people found in the human scale provided an attractive space to sit under. Parking spaces were also created under the short height decks, making use of the shade offered by the structure. Yet the shorter the deck gets the more it becomes a potential attraction to be turned into a waste dump. Since extreme low height decks cannot be accessed by users. While the deck with the bigger height does not offer a similar experience yet it offers a wide air space that can be used for example in advertisements campaigns or offering a space for hanging structures



Figure 14 fenced parking spots (personal photograph by author. 11. Sep.2016)



Figure 15 lower deck used for different human activities (personal photograph by author. 9. Aug.2016)

The Structure of the elevated road is usually the obstacle that is left to communities that exist under the elevated structure to deal with. While the columns and beams of the elevated structure are mostly a challenge that divides The Street into two parts they can be looked upon as an asset. The concrete columns of El Azhar Bridge is a place used for hanging some announcement papers and unofficial ads that quickly get removed by the local authorities leaving traces on the concrete columns. While the steel decks offer a shaded area to host different actives underneath it, which is

usually attractive as parking spots and sometimes a rest area for people waiting for the bus, leaning on the columns of the bridge to rest.



Figure 16 on the right highways structure showing traces of old advertisements (personal photograph by author. 11. Sep.2016)



Figure 17 on the left pedestrian waiting for the bus under the shade of the deck (personal photograph by author. 9. Aug.2016)

The Land is the most obvious usable space existing under the parcels of the elevated structure. As El Azhar road is limited in area due to the small width of the street. One of the decks of El Azhar Bridge was designed high enough for the local street to continue flowing underneath it. Therefore, not all the land underneath the bridge is available as an asset to be used. The available land under the lower deck is mostly used as parking areas for the owners of the shops overlooking the main street. Though different types of activities were observed during the site visits and other types of activities were indicated through the informal interviews. A1 indicated that the land under the elevated highways when left empty is inviting people to throw garbage underneath it, and it turns to be attracting the informal vendors to sell drinks and sandwiches to pedestrians. While A2 explained that the current uses are ranging between car parking if space is big enough, while the low height spaces turn out to be public toilets and waste dumps. A4 pointed out that the parking spaces are formal spaces rented by the shop owners through the government.

The activities observed during the site visits ranged from the common activities that were pointed out by the interviewees like parking and waste dump to uncommon activities that were not indicated in the interviews like bus waiting areas, drinking spots and storage areas. People were observed sitting on the sidewalks or on a single bench resting or waiting for the bus. While merchants made use of such spaces with storing their goods underneath it or loading and unloading their trucks underneath it. Charity water tank was noticed under the elevated structure to serve the

tired thirsty pedestrians walking around El Azhar area. Along the thermoses, informal vendors serving drinks and food often exist to serve the flow of pedestrians. The areas with narrow sidewalks and low height decks are often spaces for dumping waste or even locating full garbage bins. Diagram 6 indicates all the activities that were observed happening under the elevated structure in El Azhar Area with icons indicating the type of activities and site images taken by the author.

The range of activities that evolved in the areas under the elevated structure showed overlapping ideas of the interviewee's perceptions of ownership and control of the space. A1 explains that the spaces under the elevated structure are for sure officially owned by Cairo governorate authority but in reality, the street vendors are the ones controlling it. A1 pointed out that Cairo Cleaning and Beautification Agency is responsible for keeping the space clean but in reality, A1 explained that there is no one officially cleaning or maintaining such spaces except for the vendors because they perceive it their business space. A2 agrees that Cairo governorate is the owner of the space, explaining that a part of the parking spaces under the elevated structure is controlled by Cairo Governorate as a formal garage. A2 stated that the government leave the rest of the spaces to be controlled by the informal vendors and occupiers. A6 referred to Cairo district local authority when asked about ownership of the spaces under the elevated structure but no entity performs acts of maintenance and cleanliness. There appears to be a common understanding that those spaces are not public spaces that anyone can use, yet it belongs to governmental entities that control part of it by renting it to shop owners. The shop owners in return rent it informally to the vendors or grant them the right of presence. Questions regarding ownership explain how interviewees were able to differentiate between the idea of ownership where they all referred to governmental entities and control where they all referred to informal entities. This can be reflected on Lynch's (1981) spatial rights where the vendors reclaimed most of the spatial rights. Rights of presence, use, appropriation and disposition were all observed in how the spaces were used. Yet not clear modification was found in the area which excludes the right of modification from Lynch's theory.

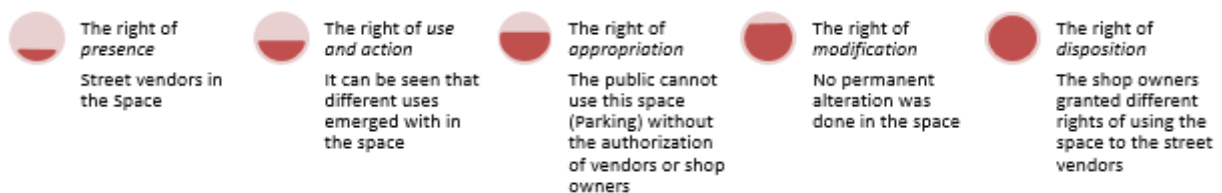


Diagram 5 Spatial rights emerging in the space with reflection on Lynch (1981)



Diagram 6 Activities developed under El Azhar Bridge

4.5. Potential uses and Future projections

The wide range of current informal uses happening under the elevated structure of El Azhar opened conversations about future uses that can be accommodated under the space in a formal way. A1 and A2 for example both discussed the potentials of initiating flower boxes or planting the space under the parcels. On the other hand, A3 explained that any space that is left empty in an area like El Azhar will be turned into a commercial space due to the dominant feature of the area. A3 discussed the potential of initiating a flower commercial base under the bridge, explaining that it will be commercial so it will blend with the area while introducing something beautiful and clean in an area full of pollution. A6 pointed out that a potential collaboration between the local district authority and the merchants of the area can happen where the merchants are in need of storage spaces so they will be willing to formally rent such spaces and hold the responsibility of keeping it clean, while at the same time provide an income for Cairo district local authority. A2 on the other side explained that the area needs a place where pedestrians can breathe in and rest for a while and the spaces available under the elevated structure are the only option for people to do that. A4 agrees that such areas offer a huge potential and it can be definitely used better than the existing way. For A4 a project as simple as public toilets and rest area managed by a private entity can benefit the area as people spend the whole day shopping and they need to rest for a while.

The overriding current use seemed to be serving the private sector and owners of automobiles, providing parking spaces and specifically for the shop owners. Though the future projections of the interviewees did not imagine the area without the presence of the elevated structure, as for them they now see the structure as a part of the identity. Yet future potentials of the presence of the structure all focused on how the structure can be for public benefit, and at the same time blend with the commercial identity of the area, whereby ideas focused on providing sitting spaces for customers and plantation in the area.

Much of the information retrieved from the site visits confirm partially with the international literature reviews of highways, in impacts related to noise or change in uses. Yet other information completely contradicts the literature, for example introducing the elevated highway to El Azhar area helped in flourishing the market underneath it by lifting the traffic above it. Such realization contradicts with Jacobs (1961) and Ebeling (2013) observations that linked highways to a decrease in pedestrian flow and commercial activities. Yet as an explanation, the area of El Azhar was

always a central vital area which can make it immune to such impacts. This reflects that the economic impact of highways on the commercial stores differ from one case to the other depending on the actual identity of the case if it is a commercial node that attracts people it will not be impacted.

If one applied the four rule theory proposed by Napolitan & Zegras that discusses conditions that need to exist in any case for taking a decision of removing the highway (Napolitan & Zegras, 2007), most of the conditions will not be found in the case of El Azhar. The bad state of the elevated structure which is approaching the end of its lifespan is fulfilling the first condition proposed in the theory. The second condition that proposed the existence of a window of opportunity that proves that the highway is not vital to the area was not fulfilled in El Azhar case. Even when the authority tried closing the bridge for few days, traffic congestions proved that the bridge is still vital for the area. The third condition discusses changing values towards mobility in the community cannot be fulfilled in El Azhar where all interviews stress the overriding importance of mobility. The fourth condition that depends on the values of empowered citizens and decision makers might partially exist in the case of El Azhar where the authority was partially trying to push the removal agenda but it was stopped due to community pressure.

The Case of the elevated highway of El Azhar or as it is widely known “El Azhar Bridge” holds a lot of layers that reflects on the uniqueness of such area. The above analysis was just a trial to scope the different dimensions of such case. Ideas of heritage overlap with a commercial economic base that is overridden by a need to keep the flow of the city. Ideas of formality and informality, control, ownership and waste spaces that can be turned into assets are all pointed out in the case. All such issues can be tackled independently by different researchers and with more depth. The main objective in discussing such case was to understand the interrelations that need to be analyzed while taking urban planning and management decisions. Such decisions should not be only limited to building structure that can replace another structure like the trials of replacing the elevated structure with El Azhar tunnel. As El Azhar Case is the only Case that the urban solution of removing El Azhar Bridge was discussed and the replacement already exists, yet the urban solution could not be applied. As there are much wider considerations of social and economic impacts of such urban solutions that needs to be considered every time before introducing or removing a structure into the built environment.

Chapter 4: 15th of May Bridge⁴

5.1. Background

The 15th of May elevated Highway is located in El Zamalek Island which is a district known to be inhabited by the relatively affluent residents. El Zamalek is also known to be one of the few areas in Cairo that managed to keep its beauty. It is located between downtown Cairo and Giza, hence traffic has to bridge through or over it. Zamalek is said to be one of Cairo's richest and most glamorous neighborhoods (Sami, 2014). The vehicular traffic increased inside El Zamalek due to the presence of many schools, banks, embassies, hotels, shopping areas and other entities that demanded daily flow. Adding to this is the flow that passes by El Zamalek from eastern Cairo, Downtown and Tahrir areas in order to reach communities located on the western side of the Nile like Mohandeseen, Agouza and recently 6th of October and Sheikh Zayed. All this traffic load demanded the construction of an elevated highway to shift the passerby traffic to the alternative upper road, leaving the street level to visitors of El Zamalek (Herzog, De Meuron, Manuel, et al, 2010).

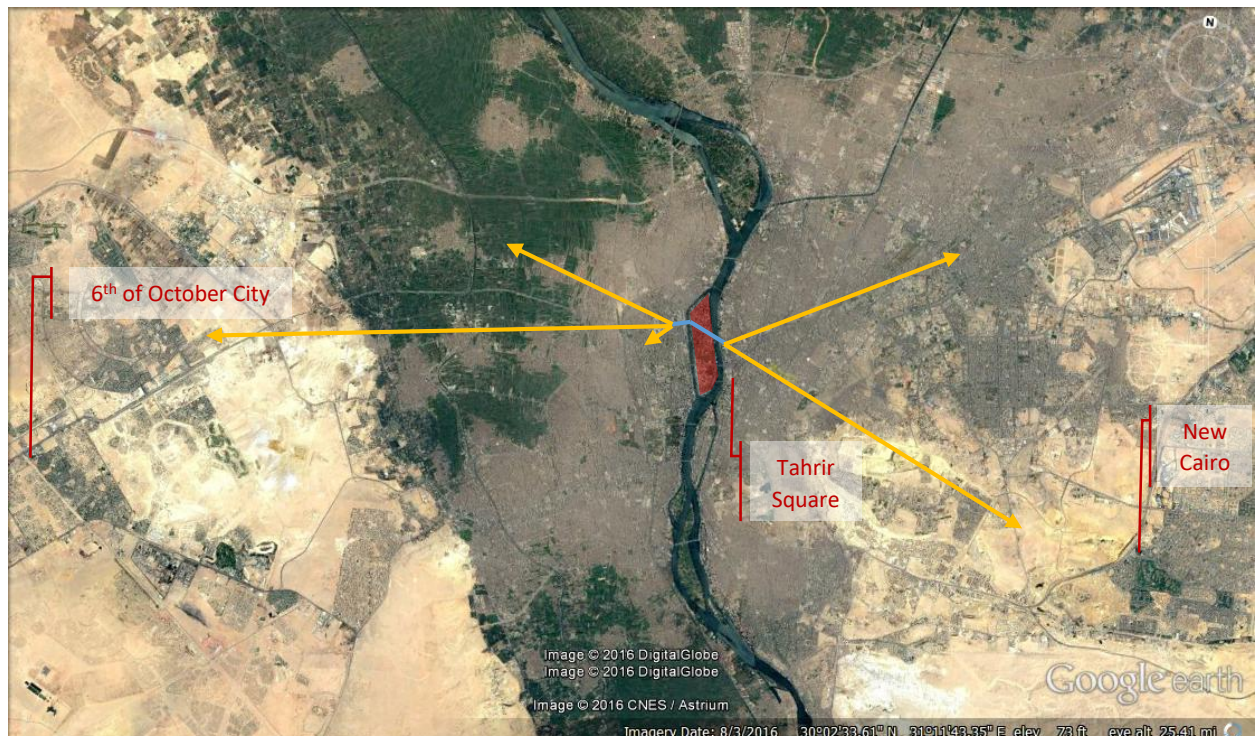


Figure 18 Zamalek marked in Red with arrows showing the different direction of traffic flow that cross over Zamalek (Map retrieved from google earth, 2016)

⁴ It is known to people and documented as the 15th of May bridge. Therefore, the term Bridge will be used sometimes within the analysis as a replacement of the term highway.

The 15th of May Bridge was built between 1980 and 1985 to connect Cairo districts to Mohandessin, El Zamalek, and Boulaq Abu Elella. The bridge starts from Boulaq crossing over the western Nile branch and cutting through El Zamalek, crossing the eastern branch of the Nile at sphinx square. The total length of the elevated road is 2.5 Km (ACE, n.d.). The elevated highway emerged as one of the main links between the urban mass and the new western desert settlements. The traffic load over the bridge also increased due to linking it to 6th of October bridge. For example, in 2012 about 238,000 residents commuted daily from the urban mass to Sheikh Zayed and 6th of October city (GOPP, 2012). Such residents either use the ring road, Saft El-Laban corridor or 15th of May and 26th of July elevated highways. The heavy daily commuting exceeded the maxim capacity of the 15th of May bridge, were in 2012 the daily traffic was 1.5 times its estimated maximum capacity (GOPP, 2012).

The 15th of May Bridge is currently a primary axis in the road network of Cairo, at the same time El Zamalek as an area is still represented in literature as a high-end neighborhood. The clash between having a residential neighborhood and a heavy traffic highway passing above it is rarely discussed. No literature was found discussing or listing any impacts or changes that El Zamalek went through since the construction of the elevated urban highway. Yet with site visits and long



Figure 19 The 15th of May Bridge marked in red cutting through El Zamalek Island (Map retrieved from google earth, 2016)

in-depth interviews with community members, new aspects and perspectives were pointed that adds to the case of Cairo's elevated urban highways.

5.2. Selection rationale

As the district of El Zamalek is home to the more affluent residents and business, more attention is expected to be given to the life and built environment quality in general. The nature of El Zamalek district and its community is completely different than El Azhar (cultural and commercial) and Saft El Laban (The following chapter) cases, therefore it is expected that the impacts and potentials scoped will be of different nature too. The change in community socioeconomic levels and district nature is expected to widen the perspective, making the scoped impacts and potentials over the three case studies more diverse.

Such attention is expected to ease the process of scoping the impacts of the elevated road while talking with different stakeholders, as residents and stakeholders are expected to be more concerned with the impacts. Rising brands and entrepreneurs often choose to start in this district as it is known as a hub for new initiatives. As a district that is more open to different nationalities (high foreign population base that prefer the area as a nice green neighborhood close to downtown) and welcoming to new initiatives, this is expected to ease the process of scoping the potentials of creating new spaces.

5.3. Scoping Impacts

Various interviews were conducted with shop owners, residents, owners of properties and renters of shops. Most of the interviewees have been living in El Zamalek before the construction of the 15th of May bridge. There were some common impacts that were common between all of the interviewees and other impacts that were pointed out individually.

The obvious increase of noise and dust was a common complaint by all of the interviewees. Z2 explained that now by sitting in his store he gets double the usual noise as he is exposed to the noise coming from the 26th of July street and noise coming from the 15th of May bridge. Z3 a resident of Zamalek illustrated that anyone living just in front of The 15th of May Bridge is highly exposed to constant noise pollution. This noise is described by Z3 as unbearable to the extent that they cannot open the balcony because they will hear cars from above bumping into all the road bumps and expansion joints.

“If they opened their balcony they can get a nervous breakdown due to the noise coming from the highway, slight vibration, noise coming from the street level and cars hitting road bumps and extension joints” (Z3, Personal Communication. August 9, 2016).

Z4 and Z5 also agreed that the noise is unbearable as they are exposed to double the normal rate of noise, while Z6 a resident explained that he usually wake up on the sounds of car breaks and accidents over the bridge.

Regarding the high increase of dust, many residents pointed out how they noticed the constant increase of dust through different stories. Z5 an owner of a carpet workshop and store overlooking the 15th of May bridge explained that he is constantly exposed to dust where he now needs to clean his carpets from dust much more than what he used to do. Z6 the owner of an antique shop also commented on the need of dusting his antiques much more often than what he used to do before building the bridge. For Z1 a resident and an owner of a building that overlooks The 15th of May Bridge the biggest impact is constant exposure to dust and pollution. Z1 gave an example of how the row of trees in front of her building used to be green now it is always gray from layers of dust. Z1 also complained that she needs to clean the filter of her AC’s monthly because they get blocked from the high rates of dust and car emission. The variation of complaints focused on noise and pollution as the main environmental impacts coming from the elevated structure.

Other interviewees did not limit their comments to dust falling from the upper street by saying that dust is not that dangerous if compared to other things falling from the bridge to the lower street. Z5 pointed out that in the winter when it rains water from the bridge fall over his store door step blocking the entrance. Z4 explained that accidents normally happen over the bridge, where parts of the fence or car remains fall from the bridge over the lower level. For Z6 having a store overlooking the bridge has contributed to destroying some of his antiques. As Z6 used to display some of his antiques outside the shop but he stopped doing this, because accidents happening above the bridge sometimes drop heavy parts over his antiques destroying them. Z6 added that the situation can be much worse than just a part of the fence falling over, as he remembered how in the days of the revolution 15th of May bridge was the weakness of El Zamalek where rebellions used to pass over the bridge and through explosives over the street below.

Other interviewees were concerned more with the quality of the environment and the aesthetic standards of the neighborhood. For Z7 the pollution was not only limited to dust and noise pollution the visual pollution is one of her biggest concerns. Z7 explained that building the bridge

changed the general look and identity of El Zamalek. Z7 gave an example by pointing to the shade resulting from the elevated structure as for her the main street was always sunny and beautiful now it is always shaded and dark. Z2 who owns a fabric store also agreed to that by saying that he would like to see the sun while walking in the street of 26th of July but the bridge is blocking all the light. On the other side, Z2 expressed that continues shade on the façade of his fabric store is beneficial because it protects his fabrics from the sunlight.



Figure 20 The 26th of July street shaded from the elevated structure (Personal photograph by author. 3. Sep.2016)



Figure 21 elevated highway shedding its shade on the main street (Personal photograph by author. 3. Sep.2016)

Most of the interviewees made a general comment on how the bridge ruined the beauty and changed the nature of the neighborhood but not all of them gave a specific description of how this happened. For Z3 the beauty is more about being a quiet residential area and the bridge managed to change that. Z5 explained how El Zamalek used to be a beautiful quiet neighborhood but the new bridge made it easier for more people to come, changing the social fabric of Zamalek. Z5 proceeded by saying that the area was full of the elite but some of them left as the area became easily accessible and noisy which repelled some of the residents. For Z1 El Zamalek is not regarded as a residential neighborhood anymore it is a commercial and administrative area now. Z1 explained that a lot of the original residents sold their villas due to the noise and traffic jam, the new developers demolished the villas and built high rise buildings which even increased the crowded streets more.

Talking about the change from a residential neighborhood to a commercial hub leads to discussing the interrelated economic impacts of the elevated structure over rates of properties and later over

the selling rates of stores. For Z3 the prices of the buildings that directly face the 15th of May bridge decreased. Z3 explained that normally in other areas in Cairo when a highway pass over an area the prices increase because it makes the community more accessible, but people originally choose to live in Zamalek because it is somehow exclusive and quiet and the bridge destroyed these features. For Z4 the prices of apartments overlooking the bridge decreased because they lost their privacy along with high noise exposure. Z1 an owner of a building overlooking the bridge, on the other hand, noted that most of the apartments that overlook the bridge and within the bridge level turned to commercial and administrative spaces.

“No one wanted to live nearby a bridge or at least that’s not the quality of life that they expect when they decide to live in El Zamalek. So I was forced to rent most of the apartments in my building as administrative and commercial spaces” (Z1, Personal Communication. September 20, 2016).

The negative economic impacts on property prices were not that obvious on the selling rates of commercial stores according to many interviewees. Z2 explained that the 26th of July Street is always jammed so the presence of an elevated highway is for sure not taking away customers. Z3 agreed with Z2 by saying that the stores in Zamalek are dependent on Zamalek residents, and they are attraction nodes for outsiders who head to Zamalek especially, so the stores are not dependent on passersby. Z4 and Z5 who both owned stores overlooking the main street long before building 15th of May bridge did not agree with the thoughts of Z2 and Z3. Z4 and Z5 both explained how their businesses struggled for four years during the building process of the bridge, as the street was a total mess so no customers used to pass by. For Z5 his shop does not sell as he used to do, Z4 explained that the street without the bridge was commercially better, everyone used to hang around the street and get some food. Z4 explains that the street became always jammed with cars which repelled pedestrians from walking and repelled cars which now prefers to take the elevated highway and pass from above. Z4 also complained that the sign of his store is not visible anymore because of the elevated structure. Z6 explained the phenomena in another way, for Z6 traffic was the problem that impacted the selling rates and not the bridge directly. As Z6 illustrated that the bridge decreased the width of the main street and El Zamalek entrance, causing more traffic underneath it and such traffic repelled shoppers, as they can’t find parking spots so they stopped coming.

Traffic flow, parking, and jammed streets were the vocab used to describe sometimes the negative impacts of the bridge, yet other times the positives of 15th of May Bridge. Z5 pointed that the bridge lifted some of the traffic but yet the negative impacts of the bridge is far more than its positives. Z1 explained that the positive impacts are for the car owners passing over El Zamalek leaving El Zamalek community to deal with the negative impacts. For Z2 he agreed that the traffic is terrible in the main street but explained that without the presence of the 15th of May bridge the traffic would have been worse, repelling any customer from coming near El Zamalek. Z2 explained that this continuous flow gives more exposure to his store which is a positive side. Regardless of individual thoughts, when it comes to positive impacts all of the interviews agreed that a better traffic flow is the only positive impact.

The range of impacts that appeared during the in-depth interviews with residents and shop owners are very diverse. Yet some of the impacts seemed to be consistent in most of the interviews, like noise and visual pollution, residential stock turning to commercial stock. While other impacts could be a result of several causes and the elevated structure may not be the primary cause leading to it, such as the lack of parking spaces, congestion, and replacing houses with high-rise buildings. Though it is important to lay down all the impacts and track how some impacts stimulated the creation of other impacts.

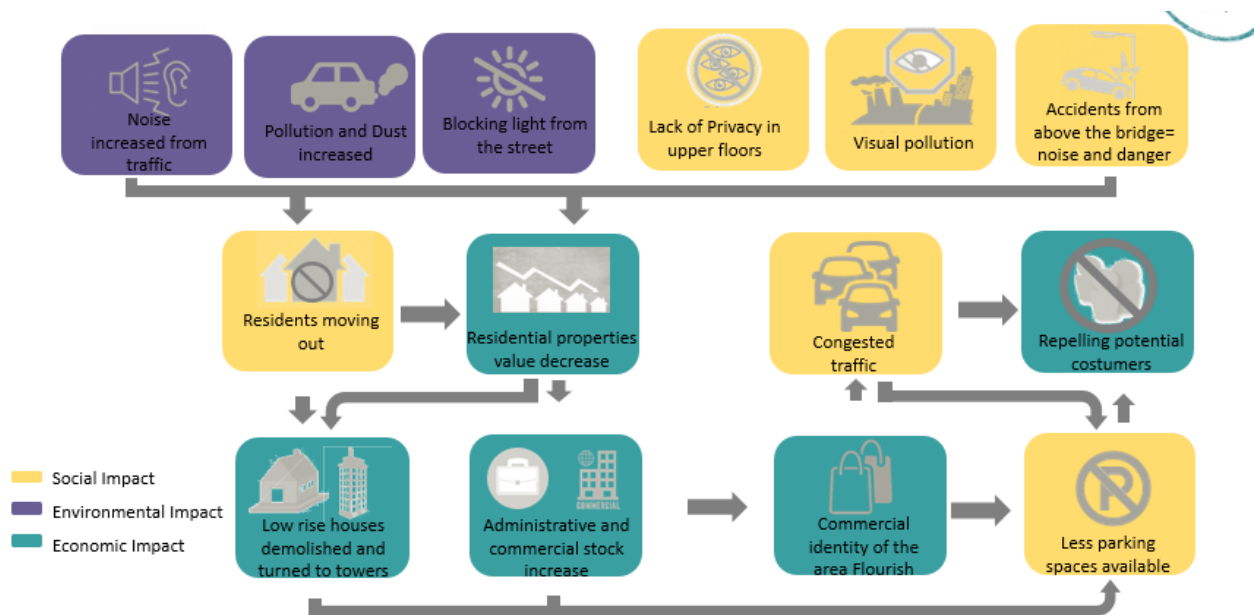


Diagram 7 The 15th of May Bridge impacts and their interrelations on El Zamalek area

Diagram 7 is showing the relation between the various impacts that were brought up by the interviewees. Noise, pollution and continues shade can be all seen as environmental impacts,

adding them to the lack of privacy and visual pollution all led to repelling the residents of Zamalek. Such impacts also lowered the residential property prices in Zamalek, especially if one is close to the 15th of May bridge. Residents started selling their properties, some properties were demolished and replaced by high towers. Other residential units were rented as administrative and commercial units. The change from low to high rise building and administrative units all lead to changing the urban identity of Zamalek and increasing pressure on car parking. Many impacts can be tracked to the 15th of May bridge but most of the impacts marked by interviews focused on the overall low urban quality of the area if compared to the past. The 15th of May Bridge may be a primary contributor in such phenomena yet this can be applicable to any district in Cairo.

The impacts observed in the case of El Zamalek verify much of the impacts that appeared through the literature review. Impacts of environmental degradation, change in the value of properties and economic activities were also common in the literature. The stress on visual pollution appeared in the literature but not in an intensive way. In contrast, the number one observations of El Zamalek residents was related to visual pollution and change in the identity of the area. Urban impacts in the literature like casting a shadow, land use change, and the creation of lost spaces were mostly verified in the case of El Zamalek. Again impacts like lack of privacy and increase in traffic congestion were also common which seems to be a common pattern in local impacts but not in the international literature.

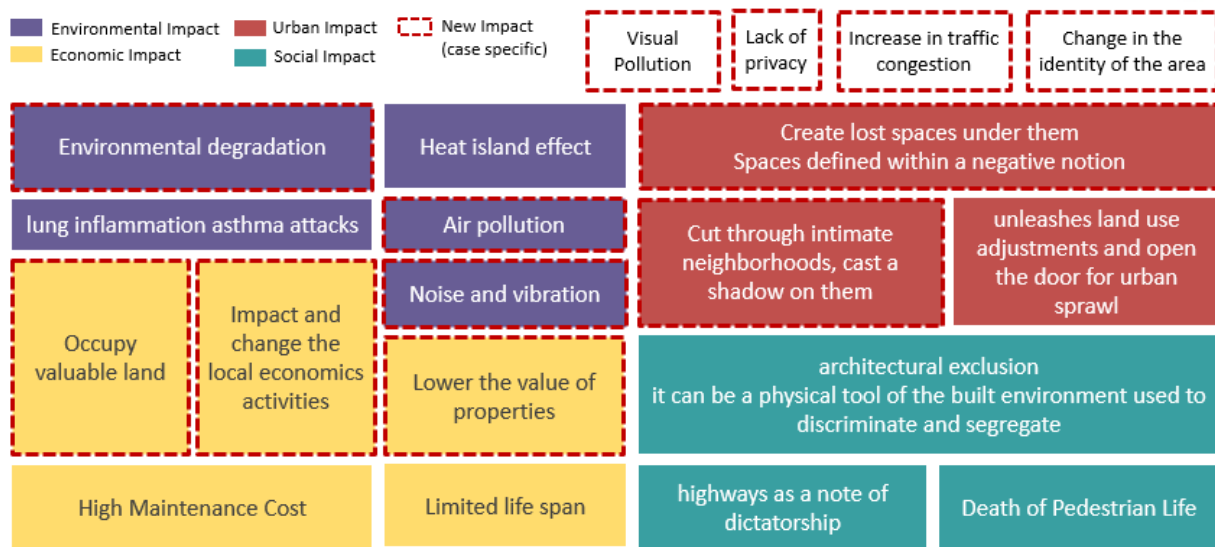


Diagram 8 Impacts of the 15th of May bridge verified from the literature review

5.4. Spatial analysis (Location, Space, Structure, land and the Sense of Ownership)

The case of the 15th of May elevated highway is indeed unique when compared to other cases, as through the scoped impacts and various conducted interviewees it is clear that the impacts resulting from the 15th of May bridge are of different nature than the other cases. Perhaps the interviewees gave more attention to the quality of the environment impacts focusing on the shade, dust, and the overall look of the street. This attention to qualitative impacts is indeed a potential in itself as residents are keener on maintaining the beauty of their neighborhood. Therefore, a spatial analysis on how can the presence of the structure in this neighborhood present more opportunities will be very beneficial. Based on Baer's (2015) initiative to finding potentials in spaces under the elevated the analysis focus on 4 parameters; the location, space, structure and land. The analysis also draws from Lynch's (1981) spatial rights work to ask questions of ownership and control.

The Location of the 15th of May elevated highway passing through Zamalek is actually the most important feature of the case. As the location is one of the biggest contributors to both the nature of impacts scoped and the potentials that will be introduced. The elevated highway is located in a neighborhood that is inhabited by a somehow more prosperous community if compared to the other cases. Such condition leads to more attention given to the quality of living and quality of the built environment. While the interviewees were more concerned with shade, noise, and beauty this was not the case in the other cases. At the same time, El Zamalek is a community that is known for embracing new trends and cultural varieties while hosting entrepreneurs and art and cultural hubs, which all can introduce a set of new potentials to be explored. For example, Z3 imagined that a space for El Zamalek entrepreneurs and rising bands to expose their talents would be really beneficial for El Zamalek community. In general, the location of the 15th of May bridge exposes it to a set of opportunities related to embracing the culture, arts and entrepreneurs, and rise ups emerging in the scene of El Zamalek.

The Space offered by the 15th of May bridge to El Zamalek neighborhood offers a set of new potentials. As The 15th of May Bridge is starting and ending on the other sides of the Nile which means that the height of the Deck is almost constant when it passes over El Zamalek Island. There are no low height spaces that cannot accommodate human scale nor high decks that are hard to manage. The average height of the deck (around one floor high) that is constant all over the street can accommodate a range of human activities, leaving no dead spaces. Z2 the owner of a fabric

store explained that he would like to make use the airspace available between the fabric store and the deck of the highway, where he can decorate it with his products. Z2 justified that it will be an advertisement for his store, attracting more people and it will be decorating the street. Such ideas of making use of the available three-dimensional space for advertisement can be very attractive and efficient owing to a high number of stores existing on both sides of the street.

The Structure of May 15th Bridge is perhaps used very efficiently if compared to the other cases. As it was noticed through the site visits and in the interviews conducted that an advertising company is making use of all the columns of the bridge as billboards. At night the billboards are contributing to lighting the street. Both Z4 and Z5 explained that the space under the elevated structure used to be filled with garbage and the structure of the bridge was covered by spider webs, then an advertisement company cleaned all the space and started using the columns for advertisement. Z4 proceeded by saying that the advertisement company is now making sure that space stays clean as it is good for more adds so it is a win-win situation. Through interviewing a representative from the advertisement company it was stated that the company made an agreement with the local authority where they are granted the right of using the columns. The local authority welcomed the agreement and they regarded it as beautification to the area. In exchange, the advertisement company also financially contribute to the street maintenance. The fact that the advertisement company is now claiming responsibility for cleaning and maintaining the space as mentioned in the interviews increase the set of potentials that adds to the efficient use of the structure.



Figure 22 The column billboards in the morning (Personal photograph by author. 3. Sep.2016)

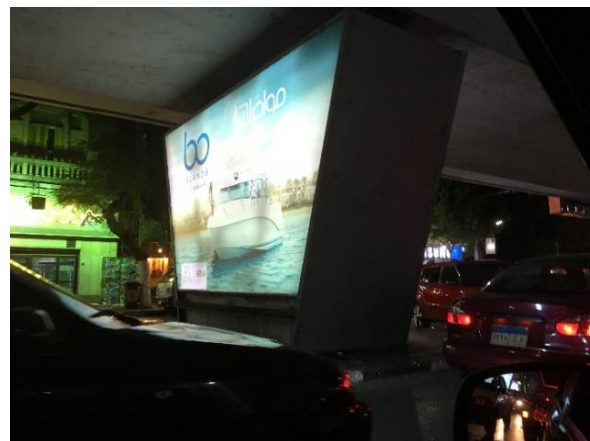


Figure 23 the internal illuminated billboards lighting the street at night (Personal photograph by author. 29. Aug.2016)

The Land available under the elevated highway of 15th May is mostly used as a parking space with the exception of few other activities. See Diagram 9 which illustrates the range of uses developed under 15th of May Bridge. The primary use of the parcels between the highway columns is parking. All of the interviewees indicated that el Zamalek is in need for parking spaces so the parking spots help in solving the problem. Some restaurants and cafes use the parcels under the bridge to park their motorcycles, where the delivery employees rest under the shaded space. While Z4 pointed out that providing parking spaces have helped in attracting jobless youth that guide people in the parking process “El Soyas”, Z4 explained that sometimes the youth are rude or with criminal records were they cause problems in the street.



Figure 24 spaces under the structure being used as parking spaces (Personal photograph by author. 3. Sep.2016)



Figure 25 a street vendor selling vegetables under the Bridge (Personal photograph by author. 3. Sep.2016)

Other random uses emerged under the elevated structure, for example, the traffic entity built a room for car licensing under the bridge, a mosque is also built under the bridge with metal structure. Few street vendors were also spotted. Z5 explained that El Zamalek is filled with police officers and they normally quickly remove street vendors, this does not allow them to establish spaces on a permanent base. Z1 expressed that the authority continues presence in the street is a positive thing because the main street is crowded enough so an informal vendor presence will worsen its condition.

The mosque and the traffic authority center are both built with metal structures with AC units visibly indicating that they are perceived as permanent structures and not just an informal occupation of space. The mosque initiated under the elevated structure seems to offer a service,

where it was noticed that it is used heavily by shop owners and employees of business overlooking the main street. On the far end of the 15th of May bridge lies under it El Sawy Cultural Wheel which is perhaps an exception of the activities usually found making use of the land available, were a permanent structure was developed providing art spaces, coffee shop, and a performance stage.



Figure 26 A mosque established under the bridge with AC units installed (Personal photograph by author. 3. Sep.2016)



Figure 27 one of the entrances to El Sawy cultural wheel (Personal photograph by author. 3. Sep.2016)

An interview was conducted with a representative from El Sawy Cultural Wheel in order to understand how potentials evolved from such land. E3 stated that before launching El cultural wheel, that specific space under the bridge was huge and filled with Garbage to the extent that the authority built a wall around it to hide it from the seen, yet still drug abusers used to sneak in to abuse drugs. E3 explained that the area was a node to waste and criminal acts, therefore, the governorate of Cairo was very supportive when Engineer Mohamed el Sawy offered to clean the waste dump and initiate a cultural activity in exchange for a usufruct (the right of utilizing the space). E3 described that the location biggest challenges were designing an accessible space for masses with safe entrances and exists. The design of El Sawy Cultural Wheel has managed to adapt the columns of the elevated road in the middle of its internal space, defining the spaces with the identity of the structure. E3 pointed out that initiating a cultural node in this specific location offered lots of potentials and opportunities; as it saved the costs of columns and slabs which are the most expensive costs in any building, provided a location in the middle of the city with a Nile view, very accessible location were residents of Zamalek, Mohadesin, Boulaq and Downtown can easily reach. Currently, El Sawy Wheel is now seen as a hub that attracts youth from all over Cairo.

Which present a new idea and potential of turning the spaces under the elevated structure as spaces that connects between communities rather than separate between them. El Sawy cultural wheel made use of both the land provided under the bridge, the view, and the structure, making use of the deck slab and the columns of the elevated highway.

Those individual unique uses developed under the elevated highway is an exception where the rest of the parcels are used as open parking spaces. Such variety of uses emerging under the elevated structure proves that such forgotten spaces can offer lots of potentials and can for sure be adapted to inhabit creative uses. Yet uses will be always limited to who is granted access and use to such space, were the informal vendors have limited access to occupy such spaces El Sawy Cultural Wheel and the mosque is formally granted the right to utilize such space. Therefore, discussing ownership and control of such spaces is crucial to understand perceptions about spatial ownership.



Figure 28 outdoor space of El Sawy cultural wheel (Personal photograph by author. 3. Sep.2016)



Figure 31 adapting the internal spaces of El Sawy cultural wheel around the structure of the bridge (Personal photograph by author. 3. Sep.2016)



Figure 30 the deck of the elevated road acting as a slab for the outdoor space (Personal photograph by author. 3. Sep.2016)



Figure 29 light structure used to close the space under the elevated road (Personal photograph by author. 3. Sep.2016)



Diagram 9 Activities under the 15th of May bridge

Through The interviews conducted with residents and shop owners of El Zamalek, it was obvious that the perceptions of ownership and control changed since the construction of the bridge.

While most of the interviewees indicated that the governorate is not maintaining full control over the space they still assumed that the governorate is the one responsible for maintaining it and keeping it clean. On the other hand, Z2 and Z5 both assumed that the main entity currently responsible for maintaining the spaces under the elevated highway is the advertisement company which is making use of the columns.

All of the interviewees indicated that currently, the formal owner of the spaces under the elevated structure is the governorate, but not all of the interviewees agreed on who holds control on such spaces. Z3 and Z6 explained that although the area is owned by the governorate, individuals who guide the cars how to park are fully controlling such spaces. Z4 who has been owning his store in Zamalek for more than 50 years explained that shop owners used to maintain control over the spaces but now only old shop owners still maintain some responsibility for such spaces. Z4 explained that old owners left those space to be controlled by individuals as parking spots, but yet if those individuals (*El soyas*) started causing any trouble, the shop owners interfere and kick them out.

Z6 and Z5 both agreed that the authority was not always consistent in their vision of dealing with such spaces, which cause confusion between El Zamalek community. Z5 remembered how one time the local authority decided to rent the spaces under the elevated highways as kiosks (mainly flower kiosks), but the governorate after that rejected the decision. Z6 explained that some people built the kiosks and got it all set up then the government simply came and demolished all the kiosks. Z6 also recalled another story that happened in the nineties were the government announced that the shop owners that overlook the bridge are eligible to rent the space in front of it as a permanent parking spot. Z6 explained that he was actually one of those who believed such decision and he did go to the local authority, paid the rent, installed a chain around his designated parking spot, then a traffic officer came and removed all the chains. As far as Z6 remembers the traffic officer said that the government does not have the right to rent those spaces.

Z5 explained that the spaces are out of control so even if there are few ideas on how to make better use of the space they will never be able to implement such ideas. Z6 also agreed that even when the local authority initiated ideas like flower kiosks the government came back and demolished

the kiosks. Z6 stated that there is a confusion about which authority is responsible for such spaces which are blocking any formal use of the space and leading to a lack of trust from the residents. Such incidents are leaving the community members of Zamalek not interested in initiating any activity under the bridge with the fear of conflict of decisions coming from different authorities.

Overall the different rights that emerged in the spaces under the 15th of May bridge remain limited in a formal way. While El Soyas and some vendors are present to use the area, and sometimes control who parks in it, they cannot grant their rights to other entities. Reflecting on Lynch's (1981) the right of disposition was not observed, the right of modification was present through El Sawy cultural wheel and the mosque but only in a formal way. While the right of presence and use were common through all entities in the space including El Soyas and the few street vendors.



Diagram 10 Spatial rights emerging in the space with reflection on Lynch (1981)

5.5. Potential uses and Future projections

The spatial possibilities that can be achieved through making the best use out of the assets provided by the 15th of May Bridge is indeed a prove that this case can offer lots of new potentials. Though the interviews conducted with residents, property owners and shop owners in Zamalek interviewees shared the ideas on how space can be more efficient. Though all of them noted that if it were not for the parking problem in Zamalek many more uses could have been inhabited in such spaces. Residents indicated that if they ever solved the parking problem, there is a wide range of ideas that can be implemented which can enrich and better suit the identity of El Zamalek.

Z2 mentioned how cafes in Zamalek started extending their spaces on the sidewalk as people like to sit in a place exposed to the motion. Z2 explained that a space under the bridge would make a great café where people can see around them motion happening in the streets yet shaded by the structure of the elevated highway. Z2 went on saying that we do not need to privatize such spaces, as every place in Zamalek is private, even gardens are fenced. According to Z2, such space could offer a great potential to be a public space just by providing some tables, benches, along with planting greenery where people can sit.

Z3 explained that changing the use of the spaces under the bridge can occur on weekends and public holidays. For Z3 the spaces will act as a parking space to serve the need during weekdays while creative uses of such spaces can occur at night, weekends and through the public holidays. Z3 explained that many cultural activities can take place in such space as it is already shaded and exposed. Z3 also proposed hosting an annual festival in Zamalek just like El Korba festival where the 26th of July Street can be pedestrianized for one day every year. Z3 discussed how El Zamalek is full of art venues and art students due to the presence of the Faculty of Fine Arts, so the creation of open boutique venues and galleries where artists can showcase their products would be a great idea. The range of ideas pointed out by the interviewees indicates how having an elevated structure in an area like Zamalek can actually end up with providing a variety of potentials. Discussed potentials mainly focused on cultural and recreational spaces which fall underneath the emerging identity of el Zamalek as a cultural hub.

The case of 15th of May Bridge perhaps introduces new scoped impacts which are different by nature from El Azhar Bridge, where most of the scoped impacts focus on environmental and visual pollution, adding to other impacts in changing the nature of the area. Some findings of the case also contradict with the international literature. Schindler (2015) indicated that highways can be a tool of exclusion to the community underneath it. A community like El Zamalek celebrated such exclusion where they are against the removal of such highway because it will expose the community to more traffic.

Since the 15th of May Bridge (built in the late 80s) did not cross half of its estimated life span yet therefore conversations related to heavy maintenance and the future of the structure is not open to discussion. None of the removal conditions elaborated by Napolitan & Zegras (2007) exist in the case of Zamalek. The importance of the 15th of May bridge as a primary link between eastern and western Greater Cairo also makes conversations of reconfiguring such bridge currently closed. Yet with the start of construction of the underground metro line passing through Zamalek (Ahran Online, 2016) such dependence on the 15th of May Bridge may be relieved changing its role in the traffic web. In such case the impacts scoped in this case will be useful for future urban planning decisions reconsidering the main traffic corridors passing through El Zamalek, and how do they impact the built environment.

Chapter 5: Saft El Laban Corridor

6.1. Background

Saft El Laban was an agricultural village located in the region of Kerdasa in Giza Government. It was one of three villages known for their fertile agricultural land (Saft El – Laban, Nahya, and Kaft Tuhumus) (Tadamun, 2015). Just like its neighboring villages Saft El Laban expanded with time and the local residents started urbanizing at the expense of the agricultural land. The agricultural lands were gradually invaded by houses for the villagers, and the houses were gradually pulled down and replaced by modern concrete buildings (Tadamun, 2015).

The prime location of Saft El Laban between Cairo University and near the ring road made its local road a major traffic axis. With the development of new settlements like 6th of October and Sheikh Zayed, the traffic passing by Saft El Laban increased as it became an alternative route for 26th of July Corridor. Establishing an elevated highway passing through Saft El Laban was an attractive option for the Government. The new highway meant an easier access for Giza, Mohandeseen, Agouza residents along with Cairo University students to the new settlements of 6th of October and Sheikh Zayed. The new elevated highway was meant to relieve the pressure from Lebanon Square and 26th of July Corridor. The project started in June 2007 and was completed in August 2010 under the name of “Saft El Laban Corridor” with the length of 4.5 Km

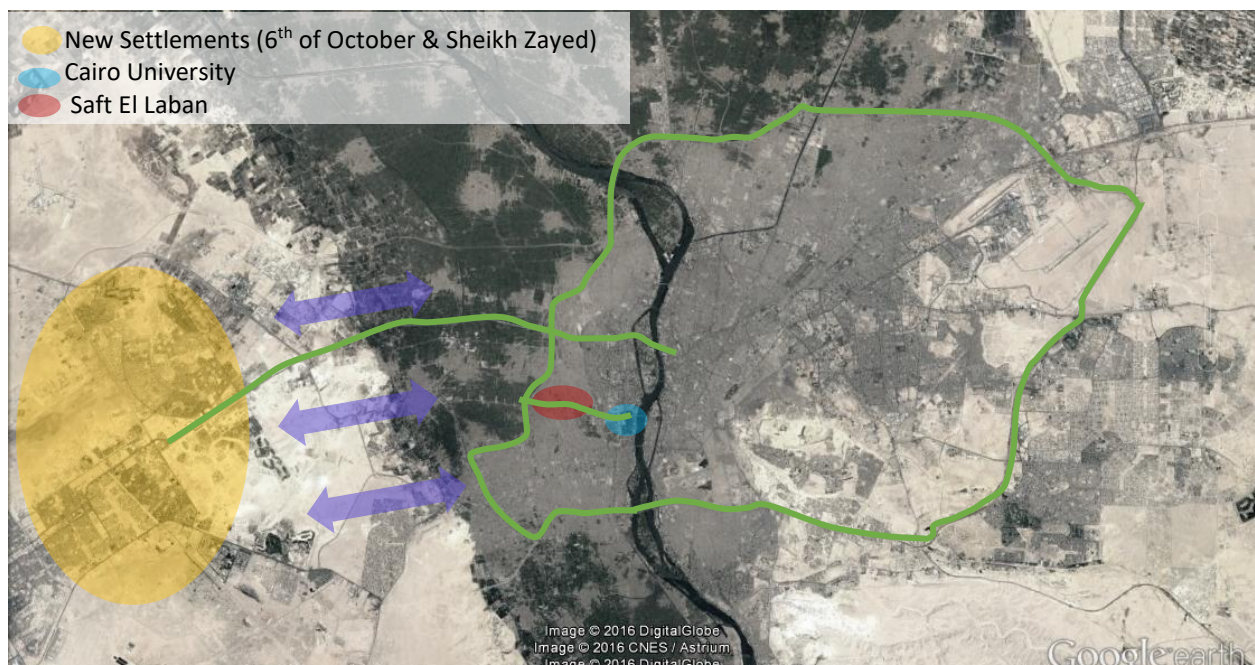


Figure 32 The prime Location of Saft El Laban between the new settlements and Cairo (map retrieved from Google Earth, 2016)

costing around 900 million Egyptian pounds (Helmy, 2016). While the Government expected that such project would relieve around 30 % of Cairo's traffic congestion a lot of traffic experts like Magdy El Shahad doubted the efficiency of such corridor. El Shahad in an interview with Egypt independent (Helmy, 2016) pointed out that such calculation is indefinite and that much money is spent on few tangible results. El Shahad suggested that the new elevated corridor would only move the problem from one zone to another and it would have been more efficient to focus on regulating the traffic flow rather than building new highways (Helmy, 2016). The efficiency of Saft El Laban corridor may be questioned by El Shahad but the idea of developing a mega elevated concrete structure in an area like Saft El Laban can also raise many questions that are worth studying.

6.2. Selection rationale

Saft El Laban Corridor⁵ is one of the most recent elevated highways in greater Cairo as it was built between 2007 and 2010. The recent construction gives a bigger chance to comparing and contrasting different views of residents that witnessed the area before and after the construction of the elevated highway. Saft El Laban corridor is also passing by an agricultural land which developed to be an informal area, this will give the research a new perspective on how the impacts differ according to the social classes and nature of the area. Since the construction of Saft El Laban corridor, daily accidents take place on it which forces daily news to discuss its efficiency. All this made the selection of Saft El Laban as a case study vital, as it brings to the discussion impacts related to change of land use from agricultural to urban, while observing how the impacts of elevated structure differ within different social structures.

6.3. Scoping Impacts

Interviewing the residents and business owners that live and own properties overlooking Saft El Laban corridor helped in scoping general impacts that are common in other cases, and individual impacts that only occurred in the case of Saft El Laban corridor. All of the interviewees have been living in Saft El Laban long before the construction of the corridor, therefore, they were able to

⁵ Corridor or using the Arabic term "Mehwar" is the term usually used to describe the elevated urban highway of Saft El Laban between the community members. Through the research the term "corridor" or "Saft El Laban Corridor" will be commonly used to refer to the elevated urban highway of Saft El Laban.

mark major changes that the area has gone through. For a better organization and scoping of the impacts, they are divided into social impacts, environmental impacts, and economic impacts.

Urban changes and social impacts were the most indicated impacts upon most of the interviews conducted as such impacts are easily detected and expressed by residents.

Urbanizing the agricultural land is a trend that has been happening intensively in Saft El-Laban for the past 20 years. Such trend is common in most of the agricultural lands near urban areas, yet some of the interviews conducted related such trend to the construction of Saft Elaban corridor. S1 a resident of Saft El Laban notes that since the year 2000 urbanization was already emerging in Saft El Laban but S1 remembers that up till 2007 agricultural lands were still dominant. S1 describes that the view from his window was full of agricultural lands and he recalls that an irrigation canal used to run in Saft El Laban main road. S2 blamed the elevated highway as she stated that building the corridor pushed the few people who were still keeping their agricultural land to urbanize it.

“you cannot have an agricultural land with a corridor full of traffic passing over it, it will pollute the product and affect the quality of plants, seeing agricultural lands and traffic corridors side by side didn’t make any sense they just do not go along so people started building more” (S2. personal communication, August 18,2016)

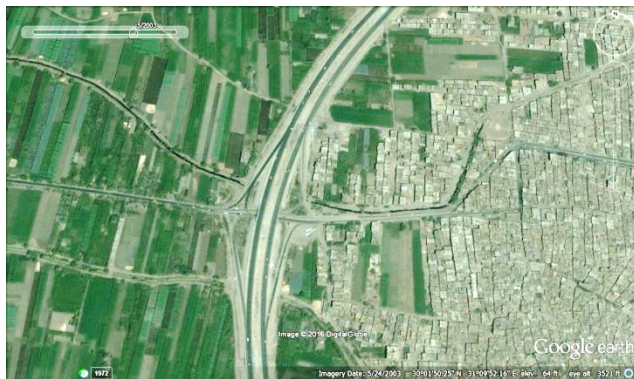


Figure 33 The entrance of Saft El Laban 2003 before building the corridor (map retrieved from Google Earth, 2016)



Figure 34 The entrance of Saft El Laban 2016 (Map retrieved from Google earth, 2016)

Multiple interviewees marked that building on the agricultural land was a phenomenon that was defiantly boosted with the construction of Saft El Laban Corridor. As they noted that ditching the water channel that was on the main road of Saft El Laban before building the corridor took away one of the few remaining agricultural features in Saft El Laban. Figure 33 is a google earth image

showing Saft El Laban in 2003 before building the corridor with a few remaining agricultural lands on the borders and Figure 34 shows the same location in 2016. Such claims match with Carvero (2009) claims in the literature which linked elevated highways to urban sprawl. Though urbanizing agricultural lands is a common phenomenon in almost all agricultural villages in Greater Cairo whether there is an elevated highway passing over it or not, but maybe the presence of an elevated structure helped in accelerating the rate of urbanization which is a phenomenon worth studying.

The changes of urban fabric were also accompanied by a change in social fabric. S3 describes how introducing the new corridor to the area changed the nature of Saft as it became located on a highway making it more accessible, attracting lots of new residents, changing the social bonds or decreasing the social solidarity.

“We used to know each other, as a resident, I used to walk in any street and know each and every individual that I meet, now if I am walking right in front of my house I can meet more than 20 people not knowing them” (S3. personal communication, August 18,2016)

Not all of the original residents of Saft ⁶ liked the idea of having a corridor passing over their lands, therefore, some of them left and were replaced by new renters. S6 explains that the new residents did not have the same sense of belonging as the original residents so they did not care about keeping the streets of Saft clean. Moreover, S6 explains that due to lack of authority presence inside the streets of Saft people felt like there was no one watching them so they started doing whatever they want. S6 expresses that they were a village located in a prime location so they were actually developing to be a city but the construction of the corridor increased the informal behavior, though turning Saft from a village to an informal area.

A major change that was noted by all the interviewees in Saft El Laban that building the corridor led to less attention from the government in regulating and maintaining Saft El Laban. S3 notes that Saft El Laban main road was an important axis as public and governmental figures that used to commute between 6th of October and Cairo used to drive through it daily. Therefore, designated government entities used to make sure that the road is well paved, cleaned, secured and maintained constantly. After the construction of the Corridor, all the major traffic moved up to the corridor,

⁶ The original residents of Saft El Laban are known as “Al Ahaly” (which means the folks) and they are decedents of known families that still control some areas in Saft till now. While the new residents that came later from different areas are known as “Al soka” (which means the residents) this normally refers to people that came to rent or buy from the originals. Being from Al soka means that one is relatively new to the area. Al Ahaly gives you more power and liability inside Saft El Laban than being from Al Soka which developed to be a type of Social status.

turning Saft's main road under it into a local road that is only used by its residents and some passerby's. Since then the attention to the road maintenance was reduced to Zero. S3 explains that the government shifted the attention to the elevated corridor and left the local road to be controlled by local people, noting that since they started the construction of the corridor in 2007 the local road was maintained two times only in almost 10 years. S7 notes that once they grabbed the lands from the local people to build the corridor and moved up they stopped caring about what is under the corridor, any maintenance that takes place now in the local road is a result of local efforts or initiatives, not governmental efforts.



Figure 35 Saft El Laban Main road condition (personal photograph by author. 24. Sep.2016)



Figure 36 The quality of streets in Saft El Laban (personal photograph by author. 24. Sep.2016)

“We used to see the government paving the road regularly, giving it attention and cleaning it. But after they built the corridor they stopped giving it attention because the important people now pass from the corridor, not Saft El Laban main road. It became very clear to me how the government perceives the underprivileged areas, the attention was for the important people not us, Now they stopped doing anything because they simply don't care about us”. (S1. personal communication, August 18,2016)

Lack of attention from the authority was the number one issue discussed in all the interviews conducted such problem was not common in other case studies, but it was mentioned in the literature by Schindler (2015) as he described elevated highways in low-income communities as a tool for exclusion. This may be linked to the informal nature of the selected area which refers to wider struggles of access to services in informal areas of Greater Cairo. This can also be noticed

in the feelings of the residents towards Saft El Laban corridor as they see it as an investment and a solution not for them but for the car owners that now passes over them. Few residents pointed out that improvements in the local road would have solved the traffic problem without the need of building an elevated corridor, avoiding the negative impacts coming from the corridor and with much less budget. S6 noted that building the corridor cost around 900 million Egyptian pounds, but most of the benefits are not going to them, questioning what would have happened if the government invested half of this amount in improving Saft El Laban.

Access to public transportation was one of the issues regularly appearing in conducted interviews. As interviewees stated that the access to public transportation was really good before building the corridor. Microbus used to access the area regularly because it was the main road. S1 notes that public transportation now takes the upper corridor, microbuses will drop you either at the beginning or at the end of the corridor. S1 proceeded by explaining how he used to go to the university in 5 minutes because he could easily find taxis and microbuses in front of his home, but after building the corridor he was forced to walk around 15 minutes to find a public transportation that agrees to take him to Cairo university. Even after getting a car S1 notes that it takes him 15 minutes to drive in the local road of Saft although it is a 5 minutes' drive because the local road is now narrower, unpaved and filled with road obstacles.

Other social impacts are related to invasion of privacy as the corridor in some areas is very close to the openings of the buildings. S3 indicates that his sister cannot now sit in the balcony because more than one time she was verbally harassed by passersby over the corridor. S6 explains how he and other residents permanently closed the windows in their apartments that overlook the corridor to protect their privacy. While through the site observations it was also noticed that some residents installed steel bars over the top floors for protection as the close relation between the buildings and Saft El Laban corridor made the windows accessible via the elevated highway.



Figure 37 The close relation between the corridor and the building (personal photograph by author. 24. Sep.2016)



Figure 38 steel bars installed on the windows of the second floor (personal photograph by author. 24.

Through all of the interviews conducted the residents and shop owners of Saft referred to the high rate of accidents happening over the corridor of Saft in which they blamed it on an error in the design of the corridor. S3 explains that the design of the corridor is very poor where drivers lose control of the car and fall from above the corridor. S2 also refers to a very short and weak fence over the corridor which keeps falling apart whenever any car crash to it. S2 explained how daily accidents happened over the corridor leading to deaths occurring under the corridor were metal bars fall on pedestrians killing them (El youm El Sabea', 2016), (El Fagr, 2016). S4 the owner of a coffee shop under the corridor expressed how the owners of activities under the corridor stand daily afraid to die because of things falling daily from the bridge due to accidents. S4 indicated that many of his furniture was damaged due to things falling over from the corridor. A similar impact was noticed in the case of 15th of May bridge, yet the rate of accidents seemed to be much higher in the Case of Saft El Laban, as it was mention in all of the interviews conducted.

S7 and S6 introduced a rather interesting yet political dimension to the multiple uses and impacts of the corridor. As they both indicated that when protests used to happen in Saft the authority uses the corridor as a control unit. As the army and police force quickly allocate themselves above the corridor gaining higher control over what is happening under and around the corridor. S7 and S6 stated that the presence of the corridor is a privilege to the authority in terms of giving them an upper control without actually having any presence in the real streets of Saft. Such thoughts align

with Robert Siez's (2006) theories that link elevated road structures to military regimes in terms of assuring more control, internal repression and external military intervention.

Though the environmental impacts need to be verified with qualitative sampling and measurements, but many of the interviewees referred to some environmental changes that took place after building the elevated urban highway "Saft El Laban Corridor". All the interviewees expressed how they became exposed to high levels of noise and pollution after building the corridor. S2 a housewife complains how she is now forced to clean her house daily or keep her window closed to protect her house from the dust and pollution coming from the elevated corridor. S3 explains how it is not only about continuous noise from cars driving over the corridor it is also the noise coming from car accidents that happen over the corridor and more intensely at night. S6 adds that it is not only about the noise it is also about continuous vibration felt inside the buildings that are very close to the corridor, as he expressed his fear of how such vibration may be damaging the structure of the buildings.

S1 express another environmental concern that is for him linked with the presence of the corridor, which is the increase of temperature. S1 describe the corridor as a dark concrete structure that absorbs the heat all day then releases it at night causing an increase of temperature inside houses close to the corridor. S1 gave example on how they used to open the window overlooking the main street to get a flow of cool air till 2009, then after building the corridor everyone needs an AC to survive. S7 points to another problem that occurred after building the corridor which is the increase of garbage bags thrown under the corridor which attracts pests and causes more pollution. Such impacts can sometimes be in direct relation to building the corridor and others may relate to bigger environmental causes like how the increase of the temperature may be in relation to global warming or maybe it simply reflects the heat island effect that is directly related to the presence of the corridor. Such complaint aligns with Ebeling (2013) in the literature review who related elevated highways with heat island effects. Overall the increase of noise, dust, pollution and temperature were the common environmental problems raised up by all the interviewees.

The economic impacts scoped varied from one interviewee to the other. Regarding how building an elevated urban highway can impact property prices. S1 explained how property prices located at the far end and beginning of Saft's corridor increased, while prices of properties that lie in the middle of the corridor stabilized after building the corridor. S3, on the other hand, indicated that

the prices of properties that directly overlook the corridor decreased, specifically in the first three floors because no one would like to open a business visibly hidden under an elevated road. S2 indicated that the prices of agricultural lands that was overlooking the corridor and the ring road increased as they became accessible so everyone wanted to buy them and build on them.

S1 described how the business related to road services like tire workshops and car maintenance flourished, specifically if it is located at the beginning and end of the corridor as it became a national axis so cars driving normally stop to do car maintenance. On the other hand, road services that are located in the middle of the corridor ran out of business as the car flow was shifted above it. S5 an owner of a convenience store that directly overlooks Saft's corridor indicated that he did not witness any change in the selling rate after building the corridor and that is probably because he is selling basic needs that won't be impacted by any changes.



Figure 39 Car Maintenance workshop at the begging of Saft El Laban Corridor (personal photograph by author. 24. Sep.2016)



Figure 40 Tire workshops at the entrance of Saft El Laban (personal photograph by author. 24. Sep.2016)

S6 introduced another perspective to the economic impacts of the corridor which is related to the socio-economic nature of Saft but is not applicable in other cases of the elevated urban highways. As S6 indicated how the construction business flourished in Saft during building the corridor and this was due to two main reasons. The first reason was related to people anticipating that Saft will be more connected to the road network so the demand for housing will increase. While the second reason was as he states that many contractors used to illegally steal the construction materials provided by the government to build the corridor and instead use them in building more residential

structures at Saft. Regardless of the legal and moral aspects of such acts, they are perceived by residents as advantages from the process of building Saft El Laban's corridor.

Apart from the advantages that appeared during the building process, the presence of the elevated highway in the main street of Saft created new spaces under it that introduced a set of new potentials and impacts to the community. The newly created shaded spaces under the structure of the corridor attracted various activities which some residents perceived as negatives while others proceeded as positives.

S1 described how when most of the traffic moved up to the corridor the slow traffic in the main street down created a chance for new activities. The spaces shaded under the elevated corridor turned to local coffee shops, mechanic and maintenance workshops for cars and Tuktuks. S1 also mentioned that some people who already owned stores overlooking the main streets used the space under the corridor as an extension to their shops. While S5 stated that local coffee shops and kiosks are the most common activity that is accommodated under the elevated highway.

S2 noticed that the local coffee shops created under the corridor are a node for criminals but still she prefers to have a coffee shop making use of the space instead of leaving it empty. As S2 describes that once space is left empty it will automatically turn into a waste dump because no one is taking care of it so she prefers it to be accommodated with any activity.

S3 described the empty spaces created under the elevated corridor as a node that attracts unwelcomed behavior. As he described the small hidden areas as a place that can turn into an open public toilet, while the big areas are used as an accommodation area for street children, drug users. S4 also agrees that all kinds of drugs are abused under Saft El Laban corridor. While the relatively decent spaces are used for car parking.

Overall no one can deny that the presence of the elevated corridor of Saft El Laban had an impact on the area. Which is relatively more visible if compared to the other case studies. Most of the impacts are perceived as negatives such as noise, pollution, and change in social and urban fabric, change of the authorities' level of attention to the area and many other impacts. While other impacts are perceived as advantages or at least potentials, like increasing some property prices, provision of building materials, and the creation of new spaces. Diagram 11 explains the range of

impacts scoped through the interviews conducted in Saft El-Laban dividing them to environmental, social and economic impacts.

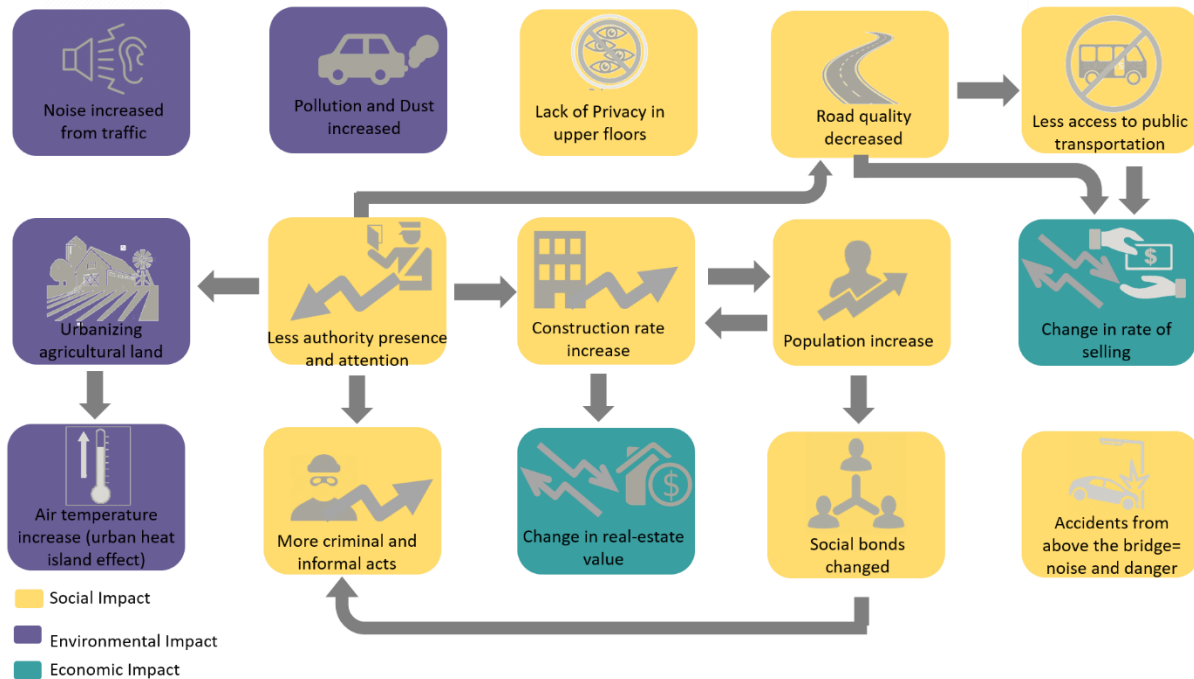


Diagram 11 different impacts scoped resulting from Saft El Laban Corridor and their interrelations

Many of the impacts scoped in the case of Saft El Laban verify the impacts of the international literature. The ideas of being a tool for exclusion was not mentioned in the case of El Azhar or El Zamalek, yet it was heavily verified in Saft Elaban area. Other impacts in Saft El Laban area directly contradicts with the impacts scoped in the international literature. Properties in Saft El Laban increased in value due to constructing the highways which contradict with the literature that linked highways to lowering the value of properties. The pedestrian life also flourished in Saft El Laban because shifting the traffic to the upper level gave more space for the pedestrians to walk on the lower level.

The urban informality of the case also introduced a set of impacts that was not common in other cases reflecting how impacts vary depending on the socio-economic level of the area. Like less

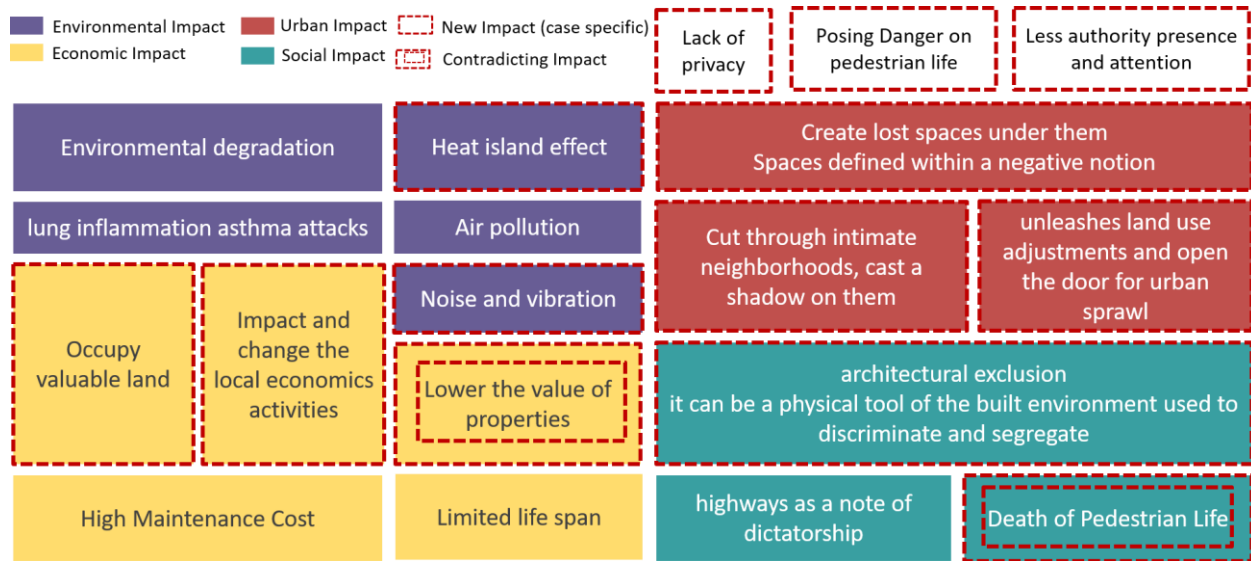


Diagram 12 Impacts of Saft El Laban verified from the literature review

authority presence, more criminal acts and change in social structure. The social impacts in the case of Saft El Laban were very dominant if compared to other cases. The interviewees did not stress on the environmental impact much if compared to other cases, as the biggest environmental impacts scoped focused on urbanizing on agricultural land and heat island effect. The economic impacts were not consistent and varied from positive impacts to negative impacts. Yet the biggest impact that can be turned into a potential lies in the idea of introducing a new structure to the area that offered a set of changes in terms of holding or inviting the creation of new activities in the newly created space. The next part is going to focus on such spatial potentials of the space discussing the potentials of different elements of the space and how it is turned or can be tuned to an asset.

6.4. Spatial analysis (Location, Space, Structure, land and the Sense of Ownership)

Since Saft El Laban corridor is the newest case study as it hasn't exceeded 10 years old yet, therefore it is easy to notice how the urban fabric is still in a clash with the elevated structure. The fact that some areas needed to remove buildings and cut through the fabric is visible with the creation of dominant yet intense spatial relations with the existent fabric. As the fabric is still evolving to align with such structure the spatial analysis of potentials that can come out of the location, space, structure, land and ownership can be beneficial. Such ideas are retrieved from Baer's (2015) analysis of Networks under the elevated spaces and Lynch's (1981) Spatial rights.

The Location of Saft El Laban can be seen as a problem creator to the case since it is surrounded with what is usually described as an informal settlement, leading to the creation of a lot of informal uses. At the same time, such condition allows Saft El Laban to make the most out of this newly introduced structure. The range of needs and missed opportunities in an informal area is much more than in the case of formal areas. On a larger scale, the location of Saft El Laban corridor as a main axis adds to the corridor's asset value. With a huge number of people who commute daily in and out of the city assuring that any initiative implemented in relation to such corridor will witness a great popularity.

The Space created by the presence of Saft El-Laban corridor offers a set of three-dimensional potentials. As the corridor is divided into two levels with the two main decks lying above each other therefore creating double the air space existing in other cases. The low height created between the local street and the first deck is very interactive with the human scale thus allowing the creation of many human-scale activities. The upper air space created between the first and the second deck offers a range of opportunities for ads and advertisements. Yet the fact that the corridor is situated on two levels increase the range of residents who are impacted by the noise, dust, and privacy intrusion coming out of the corridor.

The Structure of Saft El Laban corridor attracts different activities to happen around it. The decks offer a shaded space that is attractive for coffee shops. The longitudinal concrete beams are dealt with as a street billboard as its height and visibility are very attractive for advertising, where people pin different advertisements on it or even paint and write over its announcements. With the horizontal beam of columns are regarded as a wall that can host different activities. Some workshops hang their products on it, while kiosks deal with the column as their cornerstone were they construct three more walls and regard the existing column as their fourth side wall.

The Land under Saft El-Laban corridor is utilized to host different activities. The location of the corridor in an informal area and the weak presence of the authority as stated in many of the interviews, lead to the creation of a variety of new uses that wouldn't have been possible in more regulated areas. The informality of the area is linked with the scarcity of developable lands. Most of the lands are registered for agricultural use and if the owner decided to develop it they normally choose a residential use. Such conditions made any empty space in the area very attractive for

developing commercial uses. Under such conditions, community members managed to utilize the land offered under the elevated structure in different ways to serve their needs.



Figure 41 using the structure of the corridor for advertisement banners (personal photograph by author. 24. Sep.2016)



Figure 42 Kiosk in Saft El Laban integrating the corridor structure within its own structure. (Personal photograph by author. 24. Sep.2016)

The new uses that were observed during the site visits range from workshops, kiosks, coffee shops, storage, parking, animal corral, meeting space, waste dump and many other uses. The residents stated that the most common uses are coffee shops, as every two or three parcels, one will stumble upon a coffee shop under the bridge. Spaces that are left open are sometimes utilized for community benefits like closing it for wedding ceremonies or even setting a meeting space for community leaders which was constructed during the revolution. Such uses reflect on the potentials of space to connect between people rather than divide between them. The interviewees stated that they definitely prefer and welcome the commercial uses, as leaving the land empty will lead to filling it with waste or attracting undesirable activities. Diagram 13 illustrates the range of land uses under the elevated structure with site pictures for different uses. Although the land asset seems to be very valuable in the case of Saft El Laban corridor yet structure, space and location seem to impact the variety of uses that evolved in relation to that structure.



Diagram 13 Activities under Saft El Laban Corridor

What is allowed to happen under the elevated structure and what is not allowed? The relation between the authority and the community leads to questions related to ownership and control of such spaces. As the case of Saft El-Laban witnesses relatively more variety and intensity of activities happening under the elevated structure if compared to the other cases, it was important to understand the rights of ownership and control perceived. According to S1 the land does not belong to anyone so people do whatever they want, S1 proceeded by saying that it should be owned by the government but that is not the reality.

“The spaces under Saft El Laban corridor is supposed to be owned by the government but the government does not exist in our area” (S1. personal communication, August 18,2016)

S2, S3, S4 and S6 all agreed that the spaces under Saft El Laban Corridor are owned by the government some used the term “El Wehda El Mahaleya” the local unit, yet they all indicated that the government does not control such spaces. All interviews conducted indicated that the government leaves such spaces to be controlled by the squatters or community members. All the interviewees indicated that the government is officially the one responsible for maintaining the space under Saft El Laban corridor and keeping it clean. However, all the interviewees indicated that in reality the responsibility goes to the squatting activities; kiosks and coffee shop owners who are making use of such space.

Though two interviewees explained rather complicated ownership and control systems that developed in Saft El Laban. S1 explained that every area in Saft Elaban is controlled by a specific family and no one can establish any activity in the space under the elevated structure without getting their approval. S1 proceeded by explaining that anyone who wants to open a kiosk needs to get the approval of the family controlling the area, they grant him the approval of standing in it, but not owning it, so he will never own the kiosk he will be working for the big family as an employee.

On the other hand, S6 indicated that anyone who owns a property overlooking Saft El-Laban Corridor has the right to control the parcel in front of his property. S6 explained that if someone wants to establish any activity in one of the parcels he will go and get the approval of the owner of the property overlooking the parcel, the owner will have the right to agree or refuse while taking promises that the parcel will be kept clean. S6 was asked to explain how this rule emerged he explained that it is an unspoken rule that all the community knows about, the property owners deal

with the parcel in front of them as their front yard. S6 illustrated that this rule developed in respect of the privacy of community members

“I cannot open my window to find someone taking over the space in front of me and turning it to a coffee shop, maybe I don’t like men sitting in front of my house staring at my balcony all the day, he will be invading my privacy, unless he gets my approval and I am ok with that I have the right to kick him out of the space” (S6. personal communication, August 18, 2016).

Through the interviews and site visits, it was obvious that the community developed a strong sense of ownership towards the spaces under the elevated structure. Also, the activities seen under the elevated structure can be described to be more established not just some vendors that come and go, like other cases. The coffee shops built around it brick fences and installed smart TVs, the storage areas were built and chained. This all indicates a sense of full control over the space.



Figure 43 Coffee Shop with brick fence under the corridor (Personal photograph by author. 24. Sep.2016)



Figure 44 Metal Storage Cabinet installed under the corridor (Personal photograph by author. 24. Sep.2016)



Figure 45 LCD screen and stereos installed by one of the coffee shops under corridor (Personal photograph by author. 24. Sep.2016)

The spatial rights that developed in the case of Saft Elaban are more severe than the other two cases. The informal activities and sense of ownership in Saft Elaban are for more established than the other cases too. Through the reflection of Lynch’s (1981) 5 spatial rights, it is noticeable how all the different forms of rights can be found in Saft Elaban. The vendors are there making use of the space, permanently modifying it and excluding others from using the space. On the other hand,

the big families in Saft El Laban are fully controlling the area and granting the right of use to specific members.



Diagram 14 Spatial rights emerging in the space with reflection on Lynch (1981)

This strong sense of ownership developed in the case of Saft laban was not visible in other cases which may be in relation to the informal nature of the case where the community members emerged as the only active authority within the space. The strong sense of ownership managed to increase the spatial potentials and rights of the corridor as the spatial uses seem to be more diverse and innovative than the other cases.

6.5. Potential uses and Future projections

The way the community members in Saft El-Laban utilized the assets of the elevated structure for the creation of new uses and activities opens questions regarding other potential uses that can be accommodated in such spaces and the future projections of Saft El-Laban Corridor. Perhaps the case of Saft El Laban shows a very diverse range of informal uses under the elevated structure if compared to the other cases. Yet most of the interviews indicated that a better use of those space is for sure needed.

S1 explained that the areas under the elevated structure provide a ceiling and inputs for electricity which are far better capabilities if compared to other areas in Saft. S3 indicated that the community is lacking basic services that touch upon health and education and while there is a huge area available under the elevated structure that can actually be developed to accommodate classes and medical units. S2 also agreed on the fact that educational services are missing in Saft were the kids spend most of their day on the street, so one-class school under the bridge can form a great potential in a space like Saft El-Laban. S5 proposed that such space can host a range of governmental entities, as the residents of Saft struggle to issue governmental papers as they need to travel outside Saft to the neighboring districts to issue papers. S5 explained that building a space for the real

estate publicity department, a medical insurance unit, or even traffic and the licensing unit would make the lives of Saft's resident much easier.

On the other hand, S3 proposed that two rows of commercial spaces can be developed under the elevated structure, where each row overlook one side of the Street. S3 explained that the youth in Saft El Laban struggle to find a job, therefore, they can open a small business in such shops and they will be willing to pay rent to the government. According to S3 such idea can provide a stable income for the government that they can use in upgrading the Street of Saft El Laban. S6 agreed with such ideas as he pointed out that many more ideas can be applied to serve the community, the problem lies in getting the approvals. S6 explained that the residents of Saft are willing to fund different services yet they cannot risk and initiate any community activity under the elevated structure because the local authority will come and demolish it. According to S6 the local authority tends to ignore personal activities that happen under the elevated structure but if it is a collective activity led by more than one person the authority shows up and remove it.

Such ideas of providing a basic need like education or health under the elevated structure are actually applicable and did happen in some international cases. For example in India an informal free school that hosts over 60 students 6 days a week was established in a space under an elevated highway (Shafi, 2016). The space hosts students who cannot afford to go to formal school while providing shade and a space suitable to a class setting. Such initiatives may form inspiring start in the Area of Saft El Laban where students are suffering from the lack of educational facilities.



Figure 46 students of the free school under the bridge in India (Shafi, 2016)



Figure 47 The classroom space initiated under the elevated structure in India (Shafi, 2016)

The location of Saft El Laban corridor offers more impacts if compared to other cases yet the variety of needs increase the number of spatial assets that such structure can offer. The negative impacts of the corridor of Saft Elaban are more visible and felt by the community more than the other cases analyzed. Saft El-Laban corridor is the most recent elevated highway out of the three cases this may explain that the community is still struggling to adapt with and can clearly remember and compare the built environment conditions before the construction of the corridor. Complaints related to lack of attention from the authority to the community beneath the highways that was discussed in the literature review is much visible in the case of Saft El-Laban. This can also be a common complaint to any informal community in Egypt. The community of Saft El Laban is yet still struggling to adapt to the newly introduced structure, yet they have proved very efficient in terms of making use of the assets of the elevated urban highway.

Since this structure is the most recent structure, therefore, ideas of removing or reconfiguring it are very far from considering. Through all of the interviews conducted all interviewees referred that if it weren't for the elevated structure the condition of Saft El Laban would have been in a much better condition. Such collective social resentment of the structure was not observed in the other case studies. Indeed, social resentment is one of the preconditions mentioned by Napolitan and Zegras (2007) that may lead to the removal of the elevated structure. Yet the socio-economic circumstances of its location and the informality of the community removes any possibility of a political action taken in response to public resentment and pressure. The three other removal conditions are also not available like a change in the values of people in control, new emerging opportunities in the area or the poor condition of the structure. All such factors make the idea of removal, not a valid option.

Making best use of the current situation and rehabilitating the structure to better connect it with the built environment is probably the most convenient urban option to this case. The range of needs existing in the community can inspire a range of uses that such structure can offer, hence turning it from a long-lasting obstacle in the face of the community to a potential to reconnect the fabric and serve the need of the community.

Chapter 6: Research Findings and Recommendations

7.1. Research findings

The three cases that were studied during the research reflected a range of findings that relates to the overall situation of elevated highways in Greater Cairo and the own independent circumstances and different nature of each case. Findings are divided into three sets. First how communities realize the structure's impact and perceive the importance of its presence. Second how each community developed spatial uses of the structure, and third how communities claimed control of the newly created spaces under the structure.

How communities perceived the elevated structure and the importance of its presence

In the case of El Azhar Bridge, which is located in an area that bears cultural and historical dimension yet is now famous for being a commercial market, the bridge was perceived as a tool for mobility that assures the flow of business. Such perceptions meant that the public will be willing to discard most of the impacts and they will go under-noticed for the sake of protecting the flow. Since the structure has been in the community for more than 40 years it was harder for the interviewees to imagine the area without the structure as it was perceived as one of the urban features. It was also hard to reflect on all of its negative impacts. The elevated structure was perceived as the main connection to the area which assured keeping the flow of traffic coming in and out of the city and that is vital for a commercial area. Any ideas of removing the bridge was a threat to maintaining the commercial base of the area. Such perceptions contradicted with the international literature that linked flourished market basis with the removal of the elevated highways.

In the case 15th of May Corridor, urban impacts of the corridor were widely mentioned, special attention was given to the aesthetical impacts and the quality of the urban environment. Yet the presence of the elevated structure in the Zamalek community meant a diversion of all traffic heading to the west side of Greater Cairo. As a middle and higher income area, El Zamalek community was concerned with keeping away the passerby traffic and protecting the exclusive identity of the area. Removing the elevated structure meant for the residents that the area will be more accessible and exposed which was something not welcomed by the community that preferred keeping El Zamalek an area with limited access. Such phenomena prove that urban exclusion is

not always perceived as a negative impact, as self-sufficient communities that are not striving for connections may prefer such exclusion and perceive it in a positive way.

In the case of Saft El-Laban Corridor, the biggest amount of negative impacts was spotted, this may relate to the new identity of the structure (construction started in 2007). Hence, residents are still able to compare and contrast between the conditions of the area before and after the elevated structure. Impacts range from urban impacts that relate to the change of land use to social impacts that relate to the lack of attention to the area. Saft El Laban corridor is perceived as the tool that diverted the attention of the authority from the area of Saft El Laban. The only positive impact of the corridor was perceived as a flow of traffic for passersby from above, yet such positive impact was not appreciated by the interviewees since it was perceived as a benefit for car owners and passersby not the community of Saft. For residents of Saft El Laban the highway allowed car owners to pass right above the neighborhoods without noticing them, which decreased the investment happening in the area and gave a change to the governmental powers to ignore them. Ideas of removing or relocating the elevated structure were perceived positively, as the presence of the structure was perceived as a tool that allowed negative exclusion and led to the deterioration of the area.

The development of spatial uses under the elevated structure in each case

The spatial activities under the elevated urban highways differed from one case to another while there were some common uses like car parking, and street vendors the consistency and dominance of such uses varied in each case. At the same time, unique range of spatial uses was spotted in each case that relates to the social economic conditions of each case.

Spaces under the elevated structure of El Azhar was dominantly used for parking cars. The parking spots were granted to the shop owners and the empty spots were dominated by loading and unloading activities. Such uses served the commercial identity of the area while being dominated by the automobile culture. Along with parking, other parallel uses appeared, like street vendors that offer foods and drinks, for shoppers.

The Space under the 15th of May Bridge mostly served as a public parking space. Yet the entrepreneurial identity of the area managed to appear through the creative advertising on the structure of columns and the established cultural space of El Sawy Cultural wheel. Yet such

activities were all under formal entities and not left for individual members. Structures that served basic needs such as the small mosque or the car licensing room also evolved under the structure which was not something common in other cases. Yet the automobile culture reflected in highways seemed to be dominant where from above the highway serves the traffic flow and from below it serves traffic parking.

Saft El Laban corridor features the most diverse uses of the space under it. While the street vendors dominated the area, kiosks, workshops and coffee shops were the most common uses. Parking spaces were available but not widely used in comparison to the other cases. Activities that reflect community initiatives were only spotted in the case of Saft El Laban like greening some spaces under the elevated structure or building a meeting room to serve community leaders. Such initiatives reflect strong community collaboration and bonds that were not featured in other cases. On the other hand, activities like kiosks, coffee shops, workshops and storage space seemed to be more established with permanent structures which were only a feature in the case of Saft El-laban.

Perceptions of ownership, control and space regulation in each case:

The three cases studied reflected different perceptions regarding who owns and is responsible for the space created under the elevated highways. The variations of perceptions reflect the diversity in each case and how each community developed its own functioning system of managing such areas.

In the case of El Azhar Bridge ownership was perceived to be coming from the authority but partly granted to shop owners where they allow street vendors to use such spaces. The control of shop owners reflects the strong commercial identity given to space through always giving priority of using such spaces to the shop owners.

In the case of the 15th of May Bridge ownership was perceived as fully owned and controlled by the local authority while allocating partial control to the private sector represented by the advertisement agency and El Sawy Cultural Wheel. Perceptions of maintenance responsibilities ranged from the authority to the private sector “advertisement agency”. Such perceptions reflect the strong authority presence in the area while formally integrating the private sector.

In the case of Saft El Laban, a unique perception of residents control over the spaces under the elevated highway was dominant. Residents practice control over spaces and allow or block street vendors from using such space. The perceived full control over the spaces was translated in more permanent structures installed under the elevated highway. The responsibility of maintaining the space is allocated to the people using the space or blamed on the lack of authority presence. Such perceptions reflect the lack of authority presence in the area allowing the community to claim control over such space it and regulate it.

Understanding such perceptions is important for any future research and development work that targets the cases of an elevated structure in Greater Cairo. As it is clear that different systems evolved to claim such forgotten spaces. Any ideas of regeneration of Cairo's elevated highways will need to deal with the range of activates that evolved under the structure and people who claimed control of such spaces.

7.2. Discussion of the findings

How the three cases perceived the presence of the elevated structure was interesting to compare and contrast. While the presence of the structure meant diverting the traffic from above in the case of Saft El Laban and El Zamalek it meant connecting the area in the case of El-Azhar. While diverting the traffic and limiting the access to the community below was a positive impact in the case of el Zamalek because it meant more exclusiveness to el Zamalek area, it was perceived as a negative impact for Saft El Laban because it meant overlooking and ignoring the area. Such finding reintroduced the exclusion as a positive notion contradicting with Schindler (2015). Such difference reflect on the situation of each area as El Zamalek is a well-connected area that does not rely on surrounding neighborhoods so it strives for exclusiveness, in contrast Saft El Laban strives to be connected to more areas and services.

It is also interesting to point out that the range of impacts scoped through the interviews were not all mentioned in the international literature. For example, the lack of privacy due to the presence of elevated structure was a local impact spotted in the cases which were not mentioned before, such impact relates to the local community values. Stories that reflect on the accidents happening over highways and how they can damage spaces underneath it was not mentioned in the literature. This may reflect the high accidents rates in Egypt which made such phenomena a daily practice. A radical change in the identity of the area was something not stressed on through the literature

too. Yet other impacts in the literature were mostly verified through the empirical work; change in economic activities, property values, different types of pollution and environmental degradation.

Findings of the empirical work sometimes surprisingly contradicted with the international literature on different levels. While Jacobs (1961) blamed the elevated highways for killing the pedestrian life, the case of Saft El Laban proved the opposite. The pedestrian life in Saft El Laban flourished after constructing the bridge along with an increase in activities because when the traffic shifted above it left more space for pedestrians in the lower level. While Carey (2001) linked the elevated highways with lowering the value of properties, this was not the case in Saft El Laban. The value of properties actually increased in Saft El Laban after the construction of the elevated structure. These two findings in Saft El Laban that contradict with the literature might be related to the socioeconomic status and the informality of the case. Yet such findings are a strong prove that the formality of the area impacts greatly the type of impacts that can appear. A more solid prove to such finding is the change in population rates. While Baum-snow (2007) linked highways with decreasing population this was only confirmed in El Azhar Area. The Population in Saft El Laban has remarkably increased and almost doubled in the surrounding administrative borders of the area. This might result into new interrelations linked with population change due to the presence of elevated highways. While population decrease in cities it might increase in rural areas because it introduces a notion of connectivity to remote areas.

Kabir (2009) introduction of highways as a physical and social barrier was confirmed in the Case of Saft El Labn. On the other hand, El Sawy cultural wheel is an exception that presented space under the elevated highways as melting pot that connect between communities. El Sawy Cultural wheel is a living example that confirms Certeau's (1988) ideas of the potentials of the lost spaces under the highways in weaving the city. El Sawy cultural wheel proves how the spatial practice can manage to create a new order that was not there in the initial constructed order by planners.

On the other hand, different user rights of the space under the elevated highways that developed in each case was not consistent. While in some cases full ownership rights were observed, in other cases the right of presence and use were limitedly granted. One normally perceived Lynch's (1981) spatial rights as a ladder were the right of presence is the least form of rights and the right of disposition is the most form of rights. Yet through the empirical work, it was discovered that the hierarchy of rights is not consistent. For instance, in El Azhar the right of modification was not

observed yet the right of disposition was granted. Such observations re-introduce the spatial rights into a series of unconnected rights rather than a hierarchy.

The range of findings can be observed as one single set that introduces the case of local findings that verify contradict, or add to the literature. On the other hand, each single finding can be a contribution to one of the theories or literature discussed in the review, thus introducing a new perspective to the theory that was not observed before. Overall the findings of the research can be both helpful for actual local development and as an application of theoretical content that can be verified or altered based on empirical work.

7.3. Potential laws and regulations implications

Through the research process, it was clear that the status of elevated urban highways in Greater Cairo cannot be reconsidered without reconsidering the status of the local urban policies. Rethinking Cairo's elevated urban highways need to start from minor legal decisions (laws and regulations) to major policy and planning decisions. Through the points tackled within the scope of this research, understanding laws and regulations that relate to how the community interacts with the elevated urban highways will lead to better understanding of the whole situation and of dealing with it. For example, laws that touch upon road regulations, public road occupation, and advertising on streets and the responsibility of urban management are all relevant to the discussion. On the other side, urban policies that relate to transportation and planning inside the urban mass can all help changing the situation of Cairo's elevated urban highways within the coming future.

The far most important legislative step that practically limits or helps in avoiding the negative impacts of elevated highways is the environmental impact assessment (EIA). The Egyptian law of environment law 4/1994 required all new projects to submit an environmental impact assessment. Yet minor gaps in such law made projects like the elevated urban highways seem feasible despite all the apparent impacts. There is a tendency for large and politically driven projects to bypass EIA (Manchester, 2000). Such fact leaves the big scale elevated urban highway projects out of the question when it comes to impact. Moreover, the EIA step only appears after choosing the location, therefore, valid options of alternative locations are nonexistent. Reconsidering such minor gaps in the legislative system is a must to be able to critically question the impacts the future elevated highway projects.

The wide variety of responses that were obvious through the interviews regarding ownership and responsibility of spaces below the elevated highways reflects misconception by the interviewees. Therefore, clarification of some regulations and entity responsibilities might be beneficial.

For example, Law, no 140/1956 on Public Road Occupation states that a license from the responsible authority needs to be obtained in the case of any work conducted on public roads. Such works include:

- Fixing shelves, sheds, umbrellas, seats, tables, kiosks and any similar feature on sidewalks or public roads.
- Installing equipment's related to concerts, weddings, fairs, and decorations.
- Leaving movables or extending shops over sidewalks and streets (except for limited time or loading and unloading activities without disrupting traffic)
- Planting trees on sidewalks and public roads (yet if planted they are considered public property) (Fahmy, 2013).

Such article touch upon many of the activities spotted under the elevated highways. Fixing shelves, shed, seats, tables, and kiosk were all spotted under Saft El Laban Corridor. As the law clearly states that permission needs to be obtained from the local authority, the commonly known law in Saft El Laban is that the permission needs to be obtained from the owner of the opposite property. Extending shops and leaving a movable space for loading and unloading were very dominant in the case of El Azhar area. While the law states that this should not disrupt the traffic it was made clear by interviewees that El Azhar bridge presence is important in order to keep the local street for loading and unloading activity. Such perception tuned the local street function from mobility to loading decks. Planting trees was also an activity spotted under Saft El Laban corridor while the locals perceived as a way of space occupation to prevent waste dumping in such space.

Another example is Law 119/2008 the Building Law and its executive regulations with reference to the National Organization of Urban Harmony which states the following:

- The street advertisement is regarded as a temporary street occupation, which can be removed any time.
- No advertisement can be installed without the license and permission of the local authority (National Organization For Urban Harmony, 2010)

Such law can relate to the advertisement campaign implemented over the structure of the 15th of May bridge. While the street advertisement is regarded by law as a temporary street occupation with no responsibilities, the interviewees in Zamalek referred to the advertisement company as the entity responsible for maintaining and cleaning the spaces under the elevated structure. This refers to misconceptions from the community regarding ownership and maintenance obligations. Yet the case of El Zamalek presents a good practice were granting the advertisement company more control came with maintenance duties and beautification of the area. Such practice can inspire new regulations within the law.

Law 43/1979 of Local Administration define the duties of local units and administrative districts, Article no 183 states the responsibilities of the local units which include:

- Implementation and provision of waste management, collection of street waste, waste from public spaces and general public road cleanliness
- Monitoring, regulation and licensing of street vendors and road occupation activities
- Regulating and implementation of rules regarding temporary utilization of space and usufruct⁷ (Tadamun, n.d.)

Such law clarifies the duties and responsibilities of the local administrative units. General public space cleanliness is the responsibility of local unit according to the law yet in the case of Saft El Laban, it is seen as the responsibility of the cafes occupying the space. On the other hand, in the case of 15th of May bridge, it is seen as the responsibility of the advertisement company. Monitoring and regulation of the spaces under the elevated structure is perceived in Saft El Laban as the responsibility of property owners overlooking the elevated structure while it is the local unit's responsibility. While in the case of Zamalek monitoring and regulating the usufruct is applied by the authority like the case of El Sawy culture wheel which developed a usufruct right with the authority.

⁷ Usufruct is the right to use a space or a property owned by another person (in that case public entity) in exchange for annual fees. The person granted the usufruct right has all the rights of the owner except for the right of selling and transferring the ownership.

The misconceptions between different interviewees regarding space occupation rights and maintenance responsibilities reflect how important it is to clarify the laws and regulations of using such spaces. It was noticed through the field work those perceptions developed differently in different areas where Saft El Laban residents claimed ownership over those spaces, El Azhar street shop owners were granted control of such spaces, and in the case of Zamalek the authority is still claiming the control of the space. The location of such spaces as forgotten spaces in the public road but not part of the flow will always create vagueness in terms of rights and regulations. Clarification of such spaces' rights, regulations, and how the perceptions change from one area to another can be an individual topic open for further research in the future.

7.4. Potential policy implications

On the bigger scale discussing different urban solutions regarding Cairo's elevated urban highways is related to wider national urban policies. As starting from the 70's a huge amount of the national projects focused on road infrastructure, highways, and bridges (Sutton & Fahmi, 2001). The implications of this policy direction can be observed now in the built environment. Though such policies were needed earlier as a solution to meet decaying road infrastructure and population increase, it left the city managers with thousands of elevated structures that need regular maintenance and are approaching the end of their lifespan (El Sharnoubi, 2014). Since some of the elevated structures are over 40 years old it is now an opportunity to rethink such policy and figure out how to manage such urban asset that became an economic burden on the public management sector. The economic burden of maintenance is not stopping planners from using highways as a solution (GOPP, 2012). The traffic situation in Egypt is still suffering from severe congestions which are driving the planners to continue using elevated structures as a solution. A change of the current urban policy that focus on road infrastructure to public transport is needed, such change can lead on the long run to less need for elevated structures as a solution for traffic. Through the interviews conducted different urban experts referred to two main urban policies that need to be tackled in order to decrease the dependence on the elevated highways as a solution for traffic.

The first urban policy targets the stressing need of developing mass transportation system, between the rising new cities and Cairo which can decrease the stress of car owners commuting daily between the new cities and Cairo. E1 explained that the policies need to focus on public transportation and take better care of the transportation system in the provinces of Cairo so that

people can access it through public transportation. E6 also indicated that there is no proper public transportation network and actually some areas are only accessed by highways leaving the citizens full depending on car ownership and highways. The plans of developing mass transportation network were declared in Greater Cairo's urban strategy (GOPP, 2012), yet the strategy gave more attention to public road networks establishing more ring roads and highways cutting through the urban mass. Such strategies support limited access and solve the problems of car owners while impacting the urban masses that it cuts through. Therefore, future urban policies need to give full attention to mass transportation networks that provide access to different sectors of societies while decreasing the stress on the road networks. Only by providing a public mass transportation network that connects inside and outside the urban mass will the need to highways decrease.

The second urban policy is related to the multiple desert settlements that emerged under the polynuclear policy approach in the 1970s. Under a vision of creating new cities to lessen the urban sprawl since the 1970s three generations of new cities were launched. Urban policies of the 70s, 80s, 90s and till now are following the same approach. Some of those new cities are located very close to Greater Cairo, like Obour, New Cairo Settlement, Sheikh Zayed, and 6th of October still till now did not develop to be fully independent cities (Sutton & Fahmi, 2001). Therefore, commuting from such new cities to the urban mass is putting a huge load on the traffic network. Elevated urban highways such as the 15th of May and Saft El Laban Corridors were made to release such traffic pressure coming from the new cities. The continuing approach of establishing new cities that are not fully independent will lead to more dependency on the highways that link Greater Cairo to such new cities, therefore, such urban policy needs to be changed.

E1 an urban activist explained that most of the new satellite cities evolved to collide with Greater Cairo which means that users are fully dependent on Cairo commuting daily using the elevated highways. E1 elaborated that New Cairo, Sherouk, 6th of October are all dependent on Greater Cairo and even the new capital might evolve to overlap with Cairo in the future. E1 criticized the new cities urban policy approach explaining that they keep trying to launch new cities to solve the problems of the existing city. E1 explained that more amenities and services need to be introduced to the current established new cities to make them more independent.

“Our urban policies are all limited to one option which is building new cities this is obviously not working, so we need to try different policies because such failure is stressing

our road network, which is pushing us to build more highways.” (E1. personal communication, August 07,2016)

Such as the urban policies of the 70s and 80s lead to the current stress on the national road networks, a change of the current urban policies may resolve such stress in the future. E6 indicates that all policies are connected therefore no single decision can be made to release the need for highways. E6 explained that a change in the national policies level is needed, as it is not only about urban policies, it's about social and economic policies too, so all policies need to parallel with each other to support one single urban change.

The decision of removing one single elevated urban highway cannot be taken as a single decision it needs to be accompanied by a set of decisions offering alternative routes and proper traffic management. At the same time, a change in the current's urban policies that favor highways as a solution for urban traffic needs to be escorted by an alternative set of policies that can lessen the stress the road networks and offer alternative commuting solutions. The most obvious set of urban policies is for sure a focus on mass transportation and altering the new cities move (from only establishing the basic infrastructure to introducing amenities and services that limit their dependency), yet such changes need to be accompanied by a set of national policies.

7.5. Recommendations

Through the long process of doing the research and the fieldwork and interviews conducted with the case studies a set of recommendations can be made with regards to the situation of Greater Cairo's elevated urban highways. The following recommendations target first the policy and planning levels, second the urban management level, and third the future researchers.

Policy and planning level recommendations:

- The current policy that prefers highways and elevated structures within the urban mass needs as a solution for mobility needs to be reconsidered.
- A focus on policies that target mass transportation needs to replace the current car-centered policies.
- Land use policies that discourage urban sprawl and limit unnecessary commuting can help in decreasing the need for elevated highways in the future.
- Decisions regarding removal or relocating of the elevated highways should not be single-dimensional decisions that can be taken independently, yet they need to be accompanied

by a set of decisions that can absorb the traffic flow and take into considerations the social, economic and environmental impacts on the surrounding communities.

- Both introducing a new structure and removing a structure from a community needs pre-extensive studies to realize the social, environmental and economic impacts of such decision on the community.
- Decisions regarding roads and highways need to be taken with an eye on the affected community and not only car and flow centered decisions.

Urban management level recommendations:

- Better management of existing elevated highways is needed
- Allocating budget to existing elevated highway network maintenance instead of investing in building new highways, as the existing elevated highway network can be a threat to the safety of the users if not well maintained.
- Understand that for every new highway introduced a set of new spaces are introduced to the community that needs monitoring and regulation.
- Understand the potentials of such new spaces in serving the needs of the community, socially by offering basic services and recreational spaces, economically by being rented and bringing income that can be used to serve the structure of the community.
- Establishing a database and an inventory of all elevated urban highways in Greater Cairo and the spaces available under them (while mapping the emerging land use, ownership and spatial potentials) can help in understanding the amount of potentials that can be offered.
- A toolkit can be developed to provide ideas for different uses and activities that are allowed under each elevated structure. Such toolkit can be presented to entrepreneurs, urban activists and the private sector that are willing to initiate new projects under the elevated structures.

Recommendations for future research and researchers:

- The topic of elevated urban highways in Egypt is definitely under-researched therefore more research that tackles such topic is needed.

- Quantitative research that can represent in numbers the social, environmental and economic impacts of the elevated structures can lead to better understanding of the situation and provides evidence for policy makers and planners.
- Qualitative research that reflects the insights of the local field experts and local authority representatives on the topic of elevated urban highways will be of great benefit. As such insights can lead to opening a new door of research that compare and contrast community insights versus the authority and field expert's insights.
- Conclusions and decisions regarding Cairo's elevated urban highways cannot be made generic, as each case is completely different depending on the location, the socioeconomic conditions of the community and the age of the structure.

The elevated urban highways might be extensively covered within international literature but there is an obvious lack of local literature. This might be the case due to Greater Cairo's chronic traffic conditions which lead the public opinion to always welcome more highways, leaving no space for people to question the importance and impacts of highways. It is understood that the Egyptian case might be still far away from implementing an anti-highway movement. As urban research and local development are still focusing on covering the urban basic services and needs with not much attention to the quality of the built environment. Yet through the field work done in this research, it became obvious that elevated urban highways might even offer new spaces that can be potential in providing basic services.

Through the field work done in this research, it was proven that findings in the international literature do not always comply with the local findings. Moreover, findings of one case cannot be generalized over other local cases. Such findings indicate that much more research needs to be done in order to reach a more precise image of the local conditions. Research should not only focus on understanding the impacts over each case but also on discovering the amount of potentials offered in each case.

Research on elevated urban highways should not only be regarded as research on mobility and the flow of the city. In fact the recent trend in the local urban research that focus on public spaces and ways of revitalizing open spaces can also be relevant to research on highways. As the study of the spaces beneath the elevated urban highways can contribute to the discourse of public spaces. Other

research trends focus on informal uses of space and ways of reusing city spaces, the spaces under the elevated structures can also be part of such studies.

The elevated urban highways can also contribute to the recent attention on revitalizing city centers, and urban infill, as often highways are located in the center of cities so they might open new windows of opportunities in areas that one can rarely find an unused space.

Through taking a closer look at the case of Greater Cairo's elevated urban highways it became clear that it holds much more complexity that cannot be covered by one research. This research was a trial to scope the different complex relations that may relate to Greater Cairo's elevated urban highways with the hope of opening the door for different research work on the same topic.

Bibliography

- ACE. (n.d.). ACE Consulting Engineers - Transportation: 15th of May Bridge. Retrieved September 13, 2016, from <http://www.ace.com.eg/transportation-bridges-15th-may.htm>
- Ahmed, Bedour and Kamel, Basil (2013). Reclaiming Urban Settings: A Community Based Public Space. Oz: Vol. 35. <http://dx.doi.org/10.4148/2378-5853.1517>
- Ahram Online. (2016, September 22). Egypt to start construction of Zamalek underground metro station in 2 weeks: Minister - Politics - Egypt - Ahram Online. Retrieved October 14, 2016, from <http://english.ahram.org.eg/NewsContentP/1/244416/Egypt/Egypt-to-start-construction-of-Zamalek-underground.aspx>
- Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19–32. <https://doi.org/10.1080/1364557032000119616>
- Bauer, C., Drake, S. C., Rosamond, F., Travieso, C., & Woodward, D. (2015). *Under the Elevated*. New York: The Design Trust for Public Space.
- Baum-snow, N. (2007). Did Highways Cause Suburbanization ? *The Quarterly Journal of Economics*, 122(2), 775–805.
- Bauman, J. F. (1991). The Expressway “Motorists Loved to Hate”: Philadelphia and the First Era of Postwar Highway Planning, 1943-1956. *The Pennsylvania Magazine of History and Biography*, 115(4), 503–533.
- Burns, P., & Novelli, M. (Eds.). (2008). *Tourism Development: Growth, Myths, and Inequalities*. CABI.
- Carey, J. (2001). *Impact of Highways on Property Values: Case Study of Superstition Freeway Corridor*. *Transportation Research Record*. Sacramento. <https://doi.org/10.3141/1839-14>
- Certeau, M. de. (1988). *The practice of everyday life*. Berkeley: University of California Press.
- Cervero, R. (2009). Transport Infrastructure and Global Competitiveness: Balancing Mobility and Livability. *The ANNALS of the American Academy of Political and Social Science*, 626(1), 210–225. <https://doi.org/10.1177/0002716209344171>
- Chiodelli, F., & Moroni, S. (2014). Typology of spaces and topology of toleration: City, pluralism, ownership. *Journal of Urban Affairs*, 36(2), 167–181. <https://doi.org/10.1111/juaf.12028>
- Collins Dictionary. (n.d.). flyover | Definition, meaning & more | Collins Dictionary. Glasgow: Harper Collins Publishers. Retrieved from <http://www.collinsdictionary.com/dictionary/english/flyover>
- Cullinane, S. . L., & Cullinane, K. . P. B. (1995). Increasing Car Ownership and Use in Egypt: The Straw That Breaks The Camel’s Back? *International Journal of Transport Economics*, 22(1), 35–63. Retrieved from <http://www.jstor.org/stable/4274752>
- Deboulet, A. (2010). Urban Highways as an Embodiment of Mega and Elite Projects: A New Realm of Conflicts and Claims in Three Middle Eastern Capital Cities. *Built Environment*, 36(2), 146–161. <https://doi.org/10.2148/benv.36.2.146>

- DiMento, J. F. C. (2009). Stent (or Dagger?) in the Heart of Town: Urban Freeways in Syracuse, 1944—1967. *Journal of Planning History*, 8(2), 133–161. <https://doi.org/10.1177/1538513208330768>
- Ebeling, M. (2013). *ReThinking the Urban Freeway. Mayors Innovation Project* (Vol. 11). Wisconsin. <https://doi.org/10.1080/13604810701200961>
- El Dakhakhny, F. (2008, September 29). كوبري الأزهر سبب المشاكل لمنطقة العتبة. *Egypt Independent*. Cairo. Retrieved from <http://today.almasryalyoum.com/article2.aspx?ArticleID=180384>
- El Sharnoubi, O. (2014, November 27). 700 bridges in Egypt close to collapse: Transport official. *Ahram Online*. Retrieved from <http://english.ahram.org.eg/News/116591.aspx>
- Fahmi, W. S. (2012). Sustainable Tourism and the Rehabilitation of Cairo's Historical Districts : The Case of the Bazaar Area and the Cities of Dead. In *2nd World Sustainability Forum*.
- Fahmy, H. (2013). *Egyptian legislations in relation to the rehabilitation of Historic Cairo*. Cairo.
- Généreux, M., Auger, N., Goneau, M., & Daniel, M. (2008). Neighbourhood socioeconomic status, maternal education and adverse birth outcomes among mothers living near highways. *Journal of Epidemiology and Community Health*, 62(8), 695–700. <https://doi.org/10.1136/jech.2007.066167>
- GOPP. (2009). *Cairo 2050 Within a national vision of Egypt*. Cairo.
- GOPP. (2012). *Greater Cairo Urban Development Strategy: Part I: Future Vision and Strategic Directions*. Cairo.
- Halprin, L. (1966). *Freeways*. Michigan: Reinhold Publishing Corporation.
- Helmy, H. (2016, August 17). The Saft al-Laban Corridor: A solution to Cairo's acute traffic congestion? | Egypt Independent. *Egypt Independent*. Cairo. Retrieved from <http://www.egyptindependent.com/news/saft-al-laban-corridor-solution-cairos-acute-traffic-congestion>
- Herzog, J., De Meuron, P., Manuel, H., Rahbaran, S., & Zhou, Y. (2010). *Islands of the Nile. ETH Studio-Basel*. Cairo. Retrieved from http://www.studio-basel.com/assets/filesassets/files/files/015_Semesterprogramm_E.pdf
- Huzayyin, A. S., & Salem, H. (2013). Analysis of thirty years evolution of urban growth, transport demand and supply, energy consumption, greenhouse and pollutants emissions in Greater Cairo. *Research in Transportation Economics*, 40(1), 104–115. <https://doi.org/10.1016/j.retrec.2012.06.035>
- ITDP & EMBARQ. (2012). *The Life and Death of Urban Highways*. New York. Retrieved from http://www.itdp.org/documents/LifeandDeathofUrbanHighways_031312.pdf
- Jacobs, J. (1961). *The Death and Life of Great American Cities*. Newyork: Random House, Inc.
- Jaffe, E. (2015). America's Infrastructure Crisis Is Really a Maintenance Crisis. Retrieved July 17, 2016, from <http://www.citylab.com/cityfixer/2015/02/americas-infrastructure-crisis-is-really-a-maintenance-crisis/385452/>
- Kabir, S. (2009). *RE-THINKING OVERPASSES: A Case Study in The Planning and Design of Flyovers in Dhaka City*. Harvard University.
- Kamel, H. (2016, February 13). لكباري تخطى عمرها نصف قرن.. والأولوية للصيانة. *Egynews*. Cairo. Retrieved

from <https://goo.gl/k6LPXn>

- Keller, T., & Polach, T. (2010). *Mohandessin*. Cairo.
- Khalil, A., & El Moamen, A. (2005). Positive impact of El Azhar road tunnels on environment , safety and tourism in Fatimid Cairo. *Banha University*, 1–9.
- Levin, D. (2012). Big Road Blues. Retrieved July 16, 2016, from <http://now.tufts.edu/articles/big-road-blues-pollution-highways>
- Levinson, D. M., & Kahn, M. E. (2011). *Fix It First, Expand It Second, Reward It Third: A New Strategy for America's Highways*. Hamilton. Retrieved from http://www.hamiltonproject.org/papers/fix_it_first_expand_it_second_reward_it_third_a_new_strategy_for_ameri/
- Lynch, K. (1981). *A Theory of Good City Form*. Cambridge: MIT Press.
- Mack, N., Woodsong, C., McQueen, K. M., Guest, G., & Namey, E. (2011). *Qualitative Research Methods: A data collector's field guide*. *Qualitative Research Methods: A data collector's field guide*. North Carolina: Family Health International. <https://doi.org/10.1108/eb020723>
- Mohl, R. (2002). *The Interstates and the Cities: Highways, Housing, and the Freeway Revolt. Poverty and Race Research Action Council* (Vol. 1). birmingham. <https://doi.org/10.1017/CBO9781107415324.004>
- Mumford, L. (1963). *The Highway and the City*. Michigan: Harcourt, Brace & World.
- Napolitan, F., & Zegras, P. C. (2007). *Shifting Urban Priorities : The Removal of Inner City Freeways in the United States*.
- National Organization For Urban Harmony. (2010). *أسس ومعايير التنسيق الحضاري للإعلانات واللافتات*. Retrieved from http://www.urbanharmony.org/guide/ealanat_lafetat.pdf
- NDT resource center. (n.d.). Bridge Inspection. Retrieved July 16, 2016, from https://www.nde-ed.org/AboutNDT/SelectedApplications/Bridge_Inspection/Bridge_Inspection.htm
- Office of Environmental Health Hazard Assessment (OEHHA). (2001). *Health Effects of Diesel exhaust. Exposure*. California.
- Oxford Dictionaries. (n.d.). Highway. Retrieved July 9, 2016, from <http://www.oxforddictionaries.com/definition/english/highway>
- Parolin, B. (2011). *ECONOMIC EVALUATION OF TOWN BYPASSES Review of Literature*. New South Wales.
- Saiz, A. (2006). Dictatorships and highways. *Regional Science and Urban Economics*, 36(2), 187–206. <https://doi.org/10.1016/j.regsciurbeco.2005.11.001>
- Sami, S. (2014). A tour of Zamalek. Retrieved September 30, 2016, from <http://weekly.ahram.org.eg/News/7168/24/A-tour-of-Zamalek.aspx>
- Savvides, A. (2004). Regenerating Urban Space: Putting Highway Airspace to Work. *Journal of Urban Design*, 9(January), 47–71. <https://doi.org/10.1080/1357480042000187703>
- Schindler, S. (2015). Architectural Exclusion: Discrimination and Segregation Through Physical Design of the Built Environment. *The Yale Law Journal*, (124), 1934–2024.

- Shafi, S. (2016). A day in Delhi's under-the-bridge school for the poor - Al Jazeera English. Retrieved October 15, 2016, from <http://www.aljazeera.com/indepth/inpictures/2016/05/day-delhi-bridge-school-poor-160511154423330.html>
- Sutton, K., & Fahmi, W. (2001). Cairo's urban growth and strategic master plans in the light of Egypt's 1996 population census results. *Cities*, 18(3), 135–149. [https://doi.org/10.1016/S0264-2751\(01\)00006-3](https://doi.org/10.1016/S0264-2751(01)00006-3)
- Tadamun. (n.d.). "المجالس المحلية المعينة للأحياء" رئاسة الحي - Tadamun. Retrieved October 21, 2016, from http://www.tadamun.info/?post_type=gov-entity&p=4799#.WAnhc4997IV
- Tadamun. (2015). Nāhyā - Tadamun. Retrieved August 21, 2016, from http://www.tadamun.info/?post_type=city&p=6177&lang=en&lang=en#.V7mTB_I97IU
- Tadamun. (2013). Mit U'qba- Tadamun. Retrieved August 30, 2016, from http://www.tadamun.info/?post_type=city&p=260&lang=en&lang=en#.WE2ureZ97IU
- Tamam, A., & Abdelmeneim, E. (2005, January 4). تحقيقات . خبراء المرور يحذرون من الاقتراب منه الإزالة تهدد كوبري الأزهر. *El Ahram*. Cairo. Retrieved from <http://www.ahram.org.eg/archive/2005/1/4/inve1.htm>
- Trancik, R. (1986). *Finding Lost Space: Theories of Urban Design*. New York: Van Nostrand Reinhold Company Inc.
- UN Habitat. (1993). *Metropolitan Planning and Management in the Developing World: Spatial Decentralization Policy in Bombay and Cairo*. United Nations Centre for Human Settlements.
- Voigtländer, N., & Voth, H. (2015). *Highway to Hitler*. *Nber* (Vol. 53). <https://doi.org/10.1017/CBO9781107415324.004>

Appendix A : Interviewee's profile

Code	Initials	Area	Gender	Age	Profile	Presence in the Area	Date of the Interview
A1	AD	EL Azhar	Male	Middle Age	Owner of a shop overlooking el Azhar Bridge	Over 40 years	August 09, 2016
A2	IS	El Azhar	Male	Elderly	Owner of a shop overlooking el Azhar Bridge	Over 60 years	August 09, 2016
A3	MA	El Azhar	Male	Young Adult	Employee in A shop overlooking El Azhar Bridge	Over 15 years	August 09, 2016
A4	AA	El Azhar	Male	Middle Age	Employee in A shop overlooking El Azhar Bridge	Over 20 years	August 09, 2016
A5	FA	El Azhar	Male	Middle Age	Resident in el Azhar Area and Employed in one of the shops overlooking the bridge	Born in the Area	August 09, 2016
A6	IA	El Azhar	Male	Young Adult	Employee in A shop overlooking El Azhar Bridge	Over 18 years	August 09, 2016
A7	EA	El Azhar	Male	Middle Age	Middle Age Security Guard of one of the Companies overlooking El Azhar Bridge	2 years	September 11, 2016
Z1	AE	El Zamalek	Female	Elderly	Owner and Resident of A building overlooking the 15 th of May bridge	Born in The Area	September 20, 2016
Z2	MN	El Zamalek	Male	Young Adult	Owner a Fabric Shop overlooking the 15 th of May Bridge	1 year in the area	August 28, 2016
Z3	KF	El Zamalek	Male	Young Adult	Resident of A building overlooking the 15 th of May bridge	Over 15 years	August 29, 2016
Z4	MG	El Zamalek	Male	Elderly	Owner of a Seafood Shop overlooking the 15 th of May bridge	Over 40 years	September 3, 2016
Z5	MS	El Zamalek	Male	Elderly	Owner of A carpet maintenance workshop overlooking the 15 th of May bridge	Over 70 years	September 3, 2016
Z6	ML	El Zamalek	Male	Middle Age	Resident and Owner of an Antique Shop	Over 30 years	September 20, 2016

					overlooking the 15 th of May bridge		
Z7	SO	El Zamalek	Female	Middle Age	Resident of A building overlooking the 15 th of May bridge	Born in the area	August 29, 2016
S1	MW	Saft El-Laban	Male	Young Adult	Resident of A building overlooking Saft El-Laban Corridor	Born in the area	August 14, 2016
S2	OM	Saft El-Laban	Female	Middle Age	Resident and Owner of A building overlooking Saft El-Laban Corridor	Born in the area	August 14, 2016
S3	MM	Saft El-Laban	Male	Young Adult	Resident and Owner of A building overlooking Saft El-Laban Corridor	Born in the area	August 14, 2016
S4	HA	Saft El-Laban	Male	Middle Age	A resident of Saft El-Laban and Owner of a coffee shop under the elevated corridor	Born in the area	August 14, 2016
S5	AA	Saft El-Laban	Male	Middle Age	Owner of a convenience store overlooking Saft El-Laban Corridor	Over 40 years	August 14, 2016
S6	FA	Saft El-Laban	Male	Middle Age	Resident of A building overlooking Saft El-Laban Corridor	Born in the area	August 14, 2016
S7	MH	Saft El-Laban	Male	Middle Age	Resident of A building overlooking Saft El-Laban Corridor	Over 20 years	August 14, 2016

Code	Initials	Gender	Age	Profile	Date of the Interview
E1	MM	Female	Young Adult	Urban Activist Launched a project under the elevated urban highways	August 07, 2016
E2	MI	Female	Middle Age	Urban Expert Launched a project under the elevated urban highways	August 22, 2016
E3	MA	Male	Middle Age	Urban Activist Launched a project under the elevated urban highways	September 06, 2016
E4	RA	Male	Middle Age	Local Government Employee (managerial level)	September 07, 2016
E5	OA	Male	Middle Age	Local Government Employee (Senior level)	September 08, 2016
E6	HM	Male	Middle Age	Urban Expert in the institute of National Planning	September 28, 2016

Appendix B: interview Question Bundle

List of potential questions to be asked to the Residents/ shop owners (local stakeholders)

Impacts:

1. How long have you been living/ working here?
2. Did you witness this neighborhood before the construction of the highway? How did it change (in case of recently built highways)?
3. What are the positives and the negatives of having a highway passing over this community?
4. What was the (social/ environmental/ economic) impact of the highways on the neighborhood?
5. Is the presences of a highway in this community directly impacting you? How?

Future Potentials

6. What types of activities happen or are currently accommodated under the elevated urban highway? Are they positive or negative activities?
7. Do you think that a better use can be made of the spaces under the elevated urban highways? How?
8. What types of activities and services are missing in your neighborhood? Can they be accommodated in the spaces under the elevated urban highways?

Ownership and control:

9. Who owns the spaces under the elevated urban highways?
10. Who controls the spaces under the elevated urban highways?
11. Who is responsible for maintaining the spaces under the elevated urban highways?

List of potential questions to be asked to field Experts

Impacts:

12. What are the positives and the negatives of having a highway passing over any neighborhood? Are the positives outnumbering the negatives or vice versa?
13. What is the (social/ environmental/ economic) impact of building highways in Egypt?

Future Potentials

14. What types of activities happen or are accommodated under the elevated urban highways in Egypt?
15. Do you think that a better use can be made of the spaces under the elevated urban highways? How?
16. What types of activities and services can be accommodated in the spaces under the elevated urban highways?
17. Can certain types of activities be accommodated under the elevated highways that can bring social, economic or environmental benefit to the community? What are they?

Ownership and control:

18. Who owns the spaces under the elevated urban highways?
19. Who controls the spaces under the elevated urban highways?
20. Who is responsible for maintaining the spaces under the elevated urban highways?

Future urban policies

21. A lot of countries are currently considering removing the elevated urban highways from inside the city to revitalize the city centers. Where do you think Egypt stands within the global anti highways Move?
22. Do you think that building highways is the best option to deal with the traffic problems in Egypt?
23. What Kind of future urban policies does Egypt need to adopt in order to decrease the need for elevated urban highways?

Questions for new initiatives:

24. Why did you choose this activity in particular to lunch under the elevated urban highway?
25. Can you list the process that you needed to go through in order to develop the space under the elevated urban highway?
26. Upon rehabilitating spaces under the elevated urban highways what kind of problems did you face?
27. Can you list the stakeholders that were involved in the rehabilitation process?
28. Who currently owns, control, and responsible for maintaining the newly created spaces

Appendix C: Interviewee Consent Form



Documentation of Informed Consent for Participation in Research Study

Project Title: [Rethinking Cairo’s Elevated Urban Highways: Urban Solutions and Potential Policy Options)

Principal Investigator: [Nermin Dessouky, +201226554940]

*You are being asked to participate in a research study. The purpose of the research is [*to highlight the different negative impacts that the elevated urban highways have done to Cairo neighborhoods. The research intends to explore the alternative urban solutions that can be accommodated in elevated urban highways setting*], and the findings may be [*both published and presented*]. The expected duration of your participation is [*30 minutes*].

The procedures of the research will be as follows [The approach will involve a literature review, field observations, interviews. I will conduct site visits or physical inspections of the selected case studies, and interview different stakeholders and experts].

*There [*will not be*] certain risks or discomforts associated with this research.

*There [*will not be direct*] benefits to you from this research. *But Sharing information about the impacts of Elevated urban highways and their urban potentials will be the initiator of future public conversations between policymakers, highway agencies, community, and others stakeholder in order to reach a better setting for the existing elevated urban highways.*

*The information you provide for purposes of this research [*is confidential*].

"Questions about the research and my rights should be directed to (Nermin Dessouky) at (+201226554940)."

*Participation in this study is voluntary. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or the loss of benefits to which you are otherwise entitled.

Signature _____

Printed Name _____

Date _____

عنوان البحث : إعادة النظر في الطرق السريعة المرتفعة في القاهرة : حلول عمرانية و خيارات السياسة المحتملة

الباحث الرئيسي: (نرمين دسوقي , باحثه بالجامعة الامريكيه)
البريد الالكتروني: Nermin.dessouky@aucegypt.edu
الهاتف: 01226554940

انت مدعو للمشاركة في دراسة بحثية عن (الطرق السريعة المرتفعة في القاهرة , اثارها السلبية علي البيئه و المجتمع المحيط بها و طرق الاستفاده منها).

هدف الدراسة هو (تسليط الضوء على الآثار السلبية المختلفة للطرق السريعة المرتفعة في القاهرة . و استكشاف الحلول الحضريّة و العمرانية البديله)

نتائج البحث ستنشر في (دوريه متخصصه أو مؤتمر علمي أو ربما كليهما).

المدة المتوقعة للمشاركة في هذا البحث (30 دقيقه)

اجراءات الدراسة تشمل على (مراجعة الأدبيات ، الملاحظات الميدانية والمقابلات . وسوف تجري زيارات ميدانية لدراسات الحالات المختارة ، و إجراء مقابلات مع أصحاب المصلحة والخبراء)

المخاطر المتوقعة من المشاركة في هذه الدراسة (لا يوجد)

الاستفادة المتوقعة من المشاركة في البحث: (لا توجد فوائد). ولكن تبادل المعلومات حول آثار الطرق السريعة المرتفعة وطرق الاستفادة منها سيؤدي الى نقاشات عامة المستقبلية بين صانعي السياسات ، وكالات الطرق السريعة، و المجتمع ، وغيرهم من أصحاب المصلحة من أجل التوصل إلى وضع أفضل لل طرق السريعة المرتفعة القائمة .

السرية واحترام الخصوصية: المعلومات التي ستدلى بها في هذا البحث سوف تكون سرية

" أي أسئلة متعلقة بهذه الدراسة أو حقوق المشاركين يجب ان توجه الى (نرمين دسوقي 01226554940)".

ان المشاركة في هذه الدراسة ماهي الا عمل تطوعي, حيث أن الامتناع عن المشاركة لا يتضمن أي عقوبات أو فقدان أي مزايا تحق لك. وبمكنتك أيضا التوقف عن المشاركة في أي وقت من دون عقوبة أو فقدان لهذه المزايا.

الامضاء:

اسم المشارك :

التاريخ :/...../.....