Enhancing Slum Conditions in Cairo, Egypt: An Inter-Sector Perspective

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ENHANCING SLUM CONDITIONS IN CAIRO, EGYPT:

AN INTER-SECTOR PERSPECTIVE

A Thesis
Submitted to the School of Graduate Studies and Research
in Partial Fulfillment of the
Requirements for the Degree
Masters of Arts

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December 2015
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Many scholars have enthusiastically looked for ways to improve informal housing conditions in Cairo, Egypt. Some of them called for policy upgrading, architectural improvements, budget allocation, and sustainable development. By connecting different sectors together to serve the public interest, the birth of new solutions will develop. This paper looks at participatory approach, social architecture, urban planning, sustainable design, and land tenure to show that the overlapping of those fields may lead to a change and may actually develop different social outcomes. The criteria suggested in chapter three may not only contribute to Cairo, but to the rest of the developing countries.
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CHAPTER I

INTRODUCTION AND THESIS

The direct relationship between poverty and environmental degradation in mega-cities is usually seen in the slum areas of these cities. The overwhelming overpopulation residing in areas near factories with garbage dumps is the most notable attraction in Cairo, Egypt. Areas lack infrastructure like waste disposal and poor drainage seem to be an outstanding feature of the streets of Cairo, Egypt (El Araby, 2002). Most of developing countries suffer from high rates of urbanization. With the influx of migrants, coming from rural areas to the city, the creation of informal housing is necessary because of the lack of space and infrastructure. Urbanization increases the percentage of city dwellers who take illegal lands as their permanent homes. Residents of the slums are aware of the disparities between the areas with adequate and inadequate infrastructure and services. The implications resulting from such discrepancies are seen through the daily societal activities, and the major political reformations and movements.

Currently 54 percent of the world’s population resides in urban areas. The world’s urban population is expected to surpass six billion by 2045. It is expected to increase to up to 66 percent by 2050. If these estimates are correct, another 2.5 billion people will be added to those who live in urban areas (UN, 2014). In 2000, 760 million people resided in slum conditions, compared to 650 million in 1990. According to 2013 UN-Habitat publication regarding Urban Development and Management, 863 million people reside in slum conditions (UN, 2013). Based on the United Nations, Cairo has a
population of 18.5 million inhabitants, putting it in the top ten most populous urban cities in the world (UN, 2014). These symptoms imposed by the poor condition of the slums may lead to endemic diseases for the poor residence in Cairo along with the higher social class city residents.

Figure 1. Slum population in urban Africa. By UNDESA, 2010.

Cairo is located on the Nile River in a flat flood plain and is limited by desert hills from the west and east (Sims, 2003). In 2015, Cairo is the fourteenth largest mega-city in the world (UN 2005 Revision, 2015). The Greater Cairo area, inhabits almost a quarter of Egypt’s population (Sims, 2003). It has been accumulating informal housing leading to a large number of slums (El-Araby, 2002). Today, Egypt has forty five percent of Egypt’s population lives in slum conditions. The estimates say that about eight million slum dweller live in just Cairo (IRN, 2007).
Thus, Cairo has a giant amount of slum areas compared to Tunisia and Algeria in the Middle East. Tunisia and Algeria have slum proportions as low as 3.7% and 11.8% respectively (Arimah, 2001). It is estimated that by 2017, an average of 5.3 million housing units will be needed to accommodate the expected increase of Great Cairo’s population (IRIN, 2007). Figure 1. shows the relationship between slum populations in Africa’s countries. Egypt, as seen in this figure, has a lower portion of slums compared to most of the countries in Sub-Saharan Africa, but not the Middle East. The reason behind the continuous increase of the population in Greater Cairo is the natural increase, the incorporation of the surrounding rural population, and the continuous pouring of rural migrants into the city. Although there are statistics and estimates in the previous paragraphs, observers from the government keep on ignoring this fact and blame it on urbanization and that the rural poor are continuously pouring into the city (Sims, 2003).

Having huge bodies of slum areas in the city has always been thought intriguing to researchers. Researchers have been trying to understand the causes and effects of slums. In order to study the phenomenon, scientists from different fields tried to find definitions for slums. There are plenty of ways in which slums are defined, and sometimes other informal settlements are referred to as slums, which is not necessarily the case.

Based on UNHABITAT slum is defined as:

A group of individuals living under the same roof in an urban area who lack one or more of the following:
1. Durable housing of a permanent nature that protects against extreme climate conditions.

2. Sufficient living space which means not more than three people sharing the same room.

3. Easy access to safe water in sufficient amounts at an affordable price.

4. Access to adequate sanitation in the form of a private or public toilet shared by a reasonable number of people.

5. Security of tenure that prevents forced evictions. (State of the World Cities, 2006/7)

The Egyptian slums are termed *ashwa‘iat*, meaning “random.” It is used to indicate “deteriorated or underserved public areas”. Sometimes it also implies that the areas are unplanned and constructed on illegal lands or by illegal means. Thus, *ashwa‘iat* are not necessarily slums. However, areas being illegally constructed usually suffer from poor infrastructure and public services. They have inadequate access to service and infrastructure to fulfill their basic needs.

There are four different types of informal settlements that shape the greater Cairo slums. The typology is created by the Egyptian government’s Census Department as a method of understanding and assessing the problem. Type A is settlements built on former agricultural lands which not only reduces the overall agricultural spaces of the areas surrounding Cairo, but also expand without suitable infrastructure. Type B denotes the settlements built on government owned desert lands that are built without permission or contracts. Historic areas are prevalent around Cairo, however, not much attention is paid to their preservation. These historic areas
have deteriorated over time and are inhabited by the urban poor, thus, creating type C, informal settlements in deteriorated historic cores. Finally, type D represents the residents of the decayed urban pocket of the city. This type defines the random settlements created around the edge of the city and in abandoned new houses that were mostly left due to disputes (Sims, 2003).

Another way informal housing is categorized in Egypt is with respect to land tenure. There are two main types of ashwa’iat: squatter settlements and informal housing on legally-occupied land. Those typologies include houses constructed on illegally-occupied land not included in a legal subdivision, houses constructed in illegally-occupied land included in a legal subdivision. (ABT Associates and GOHBPR, 1982). As stated before, settlements on agricultural lands make up the biggest portion of informal settlements. Some are constructed on legally-owned land not included in a legal subdivision and does not follow the zoning regulations. Others are constructed on legally-owned land included in a legal subdivision but have been built without standard building codes (Arandel and Batran, 1997, 14).

**Research Question**

The definitions and typology serve as bases to many studies related to slums. Although there have been many studies done on the problem, few strategies seem to work. The researcher aims to answer the following question: why are not slums disappearing in Cairo? Why have slum rehabilitation projects been successful in other parts of the third world, but not in Egypt? Why do the different fields of planning, political science, and design have proposed solutions in research that are not successful in real life?
Thesis Statement

A common point between politics and design is that they both deal with humans. Focusing on this aspect of the different policy sectors, this researcher considers that the quality of the successful globally implemented programs is determined by the attention paid to the social and physical sustainability of the rehabilitation plan. The most practical method in slum rehabilitation projects is the application of innovative policy solutions including participatory approach with sustainable design methods to serve the social and physical elements in the rehabilitation of informal housing areas.

The purpose of this project is to provide practical managerial and design solutions to the persist issue of the accumulation of slums. It will focus on deriving policies, project applications, and inventive sustainable design solutions from successfully applied or partially successful projects and reapply them to the particular social and political contexts of Cairo. Through exploring how previous literature and existing data in different disciplines of politics, sociology, urban planning, urban design, interior design, sustainable design, and landscape design intersect to solve the problems facing slums.

Significance of the problem. Slums in Egypt are not a phenomenon that can be ignored; they are something that Egyptian pedestrian’s experience daily. Generally, social scientists from different disciplines and countries have been researching the topic for decades, providing extensive theoretical and historical information about the causes, effects, and future implications of the mushrooming of slums. However, there has not been enough research on practical ways, whether from a project management or
design perspective, the lessons learned from these projects can be applied to the case of Cairo, Egypt. The significance of this project is to add different existing perspectives to the policy concepts in the field based on the typologies of slums in Cairo, Egypt.

The project will explore the different analysis exhibited by previous research about informal settlements in Cairo, Egypt based on their typologies. In Chapter Two, the four different typologies of Cairo slums are discussed with examples from various case studies. Moreover, it will include examples from Turkey, Brazil, and India. Chapter Three will discuss evidence of the problem, current issues in Egypt, and how to use the strengths of the global project and apply them to Cairo informal housing. This project will demonstrate why those programs have yet to solve the issues facing slums. The final section will further evaluate the gap in the field by connecting all the previous points together to complete the picture.
CHAPTER II

REVIEW OF LITERATURE AND RELATED STUDIES

In 2015, developing countries are currently flooded with informal settlements. Researchers have been looking into the issues facing informal settlements in developing countries for decades, however; problems still exist. Even after many different approaches have been taken and many perspectives have been considered regarding slum rehabilitation in Cairo, there is still a gap in the field. This missing part is the overlapping of the interdisciplinary fields to reach optimal solutions. This chapter includes a synthesis of existing research in fields like policy-making, urban planning, urban design, architecture, and sustainable design. It also includes examples of successful projects to upgrade slums that adopted an interdisciplinary approach in the rehabilitation process. It focuses on deriving policy solutions and design methods from global experiences. These solutions will then be reapplied to the case of Cairo, Egypt in Chapter Three.

Scholars have looked at the issues facing slums from different perspectives. In many developing countries that are working to improve the lives of slums dwellers, three main approaches are being taken to solve the problems (Smith, 2008). The first approach is *expulsion*, a view that calls for the removal of slum residents and the destruction of the areas of the cities in which they lived (Werlin, 1999). The second approach is the *radical demolition and rebuilding* of entire slum neighborhoods with the rebuilding done by following formal standards (Carmon, 1999). The third approach is *a moderate upgrading and maintenance of the existing infrastructure, improved*
drainage systems, streets widening, and enhancing waste disposal systems (World Bank, 1974;1980).

The expulsion approach views slum inhabitants as parasites to the city. The first type believes that slums are endemic diseases and the only way for development is completely destroying these areas. The first type might slightly sympathize with the slum inhabitants, but still think that the only reason for development is to radically get rid of those settlements.

This approach is currently being undertaken. In 2014, Miskloc, slums located in North Hungary, adopted an ordinance asking for the complete removal of informal area. The local government suggested compensations for the families. However, those compensations did not help them afford another place in the city; it would instead force them to create a new slum area in a different location (Budapest Telegraph, 2014). This approach is against basic human rights and protects the human dignity of the privileged classes over that of slum inhabitants. This paper rejects the notions of the expulsion approach. The thesis of this paper will be more applicable to the second and third approaches to address the problems in slums, upgrading and rebuilding.

Major Theories in Development

Since the issues facing slums became persistent in many cities around the world, they became hard to neglect, scholars strived to find causes and solutions to the problem. This section analyzes one of the main policy arguments in slum upgrading and rebuilding. One of the most prominent theorists of self-serve, in-low income housing is John Turner. He argued that urban poor are capable of improving their own lives through constructing and upgrading their informal houses (1967). The theory
argues that this is a method of development that does not require government intervention (Turner, 1972). He also suggests that in accordance with families’ resources, they add elements that fit their needs. However, when governments require specific standards for buildings, it disregards the economic and social need of the people (1967). Critics perceive government’s role in upgrading slums differently. Turner argues that government involvement leads to failure in slum upgrading. He suggests that poor have the right to upgrade their spaces based on their needs and beneficiaries (1972).

Although Turner’s argument may seem considerate of the economic and social realities, it lacks practicality in the long run. Turner states that well-designed houses are not appropriate for developing countries (Turner, 1967). Turner suggests that housing standards are just for modern countries like the United States and Europe, however, this claim is based on false assumptions. Turner says that slum dwellers “prefer to live in large unfinished houses”. (1967, p. 167). Although needs of residents differs between developed countries to developing ones, basic design standards should be considered when governments in developing countries are planning for low income.

Rob Burgess, a Neo-Marxist and a dependency theorist, harshly criticized Turner’s self-help housing initiative. He claims that self-help, while it might increase the autonomy of the urban poor, relieves the government of any responsibility regarding housing and allows the capitalist class to dominate the housing sector (Burgess, 1912). Furthermore, it depoliticizes the usage of technological methods of building, limiting those to the higher social classes. When the government is degraded from the responsibility of providing the technology and the materials, the opportunistic
higher class becomes a controller of those means. In the long run, it creates inequality socially, politically, and economically (Burgess, 1912).

Although Turner’s arguments seem flawed based on the criticism above, its discussion of the importance of relieving the government from the responsibility of public housing planning is partially true. During the middle of the twentieth century, governments in developing countries took a new approach to housing. They established housing policies made the state the main provider of low income housing. Critics, including Turner, condemned the government public housing, both because of its failure and its lack of sensitivity to people’s needs (Turner, 1967;1972;1977; Glaessner, et al., 1995).

Another main policy argument put forward by those who advocate slum upgrading is secure land tenure. Turner’s argument that people prefer poor housing conditions lacks credibility. Nakamura argues that there is a strong relationship between the security of residents’ tenure and their housing construction (2014). The struggle to balance between the probability of eviction and the fear of eviction reduces the dweller’s trust level, leading to lack of investment (Van Gelder, 2007). People are more likely to invest in construction if they expect future benefit. Nakmara and Van Gelder projected that there is a strong relation between secure land tenure and construction. This shows that people would accept or try to hold on to the minimum they are offered, fearing its loss. If the residents can expect future benefits from the space, there is no doubt that they would prefer better housing conditions. Unlike what previous researchers said suggesting that people will accept whatever housing they can get.
This was evidenced in the case of Mumbai’s slum dwellers. They preferred living on the upper-levels of the new buildings to protect themselves from noise, smell, and messiness (Mukhija, 2002). Unlike what Turner suggests, physical attributes and settlement layout is essential in upgrading slums to meet dweller’s level of comfort. Beneficiaries are more likely to invest in areas with more attractive physical attributes. Dwellers consider the size, layout, amenities, and infrastructure (Mukhija, 2002).

This is a vicious circle in policy making, investment in housing and land tenure lead to each other. Another major downfall of Turner’s theory is focusing on the importance of secure land tenure without paying attention to the importance of the value of land tenure. Dwellers do not only care about having legal tenure for the land, as the land’s value is probably low and unhealthy. However, they consider the value of land as they think of it as real estate and not a shelter (Mukhija, 2002). Secure land tenure is not a justification for Turner’s argument. There were efforts from different governments to face this particular aspect of the issue. However, legalizing land tenure for the poor is a double edged weapon.

More studies have been conducted by scholars including one by Hernando de Soto, a Latin American economist. He suggests that the urban poor who lack full title of their lands have more security than is often assumed. Entrepreneurs and capitalists hunt for legal access to land, and the urban poor are always ready to sell in order to increase their liquid capital and improve their living conditions for small periods of time. So, leaving the urban poor with access to their properties, but without the legal documents is more beneficial for them in the long run (Hernando, 2003, 159).
However, Hernando’s argument leads to people losing their rights to the land they lived on when demolishing and rebuilding projects take place.

Although public housing did not seem a successful endeavor, allowing the poor autonomy was also an incomplete approach due to the lack of finances. Neither the new rural migrants nor the state have enough money to fund government provided public housing. Turner suggests that the absence of government intervention will lead to urban poor’s autonomy and people-centered development (1967; 1972; 1977). However, this does not seem to be true due to the financial constraints that always limit the choice of the urban poor (Gilbert, 1982; Ward, 1982). In addition, the lack of government intervention and standardization of minimum qualities of the buildings lead to slum spreading. Moreover, Turner discourages government intervention when it comes to housing upgrades, but he does not provide sufficient information on strategies that governments can use to support upgrading without intervention (1972). The World Bank was influenced by Turner’s argument and pushed governments away from intervening in housing provision (World Bank, 1993). However, by the end of the 20th century, the World Bank realized that the government should have a prominent role in housing and planning (World Bank, 2000).

Overall, there are many flaws in Turner’s theory on upgrading, however; it is essential to consider his statement on social and economic needs because providing strict codes that requires expensive materials and large pieces of lands will not be something they can acquire. It also directed government and scholars’ attention to the need of secure tenure. Turner’s argument is not completely invalid, but in needs extensive bureaucracy. Also, in theory land tenure is important, but in practice priority
to is given to infrastructure development. Governments should develop relatively straight forward standards that ensure the development of adequate housing that ensures basic human needs and considers the economic and social status of the residents. Also, Turner’s theory has initiated scholars and governments attention to secure land tenures and its importance in development and upgrading.

Self-labor, implemented from Turner’s theory, is applied around the world. However, the extent of its success is not always clear. One major example is the Mutirão project in Brazil. Mutirão started after the fall of dictatorship in 1984. It was aided by several environmental organizations, but mainly by the new Brazilian government. Its goal was to build 400,000 units, but the program was frozen in the 1990s and the goal was never reached (Smith, 2008). The completed portions of the project only provided shelter for 50 homeless families and home improvement for 148 families (Cabannes, 1997). A passion driven idea, mutirão used the self-build approach suggested by Turner. Mutirão’s main concept was self-labor. The government gave individual dwellers land. Its costs were expected to be returned by the people again. Self-labor did not reduce the cost for the dwellings due to the lack of technical instruction and expense of materials. It also resulted in loss of money and incomplete projects due to the lack of ability and experience of the families in construction (Smith 2008). Due to the lack of resources, technical assistance was limited and the supervision over the materials used was not as strong as what it was supposed to be. Although the program adopted the community integration approach, it focused on “the building of one’s house” and not income-generating components like commercial buildings (Cabannes, 1997, P.4), which is also an outcome of Turner’s theory.
Planning and Participatory Approach

Most of the literature available in the urban planning field with regard to the upgrading and rebuilding of slums addresses the participatory planning theory and the community integration in the rehabilitation projects in general. Agache explains participatory planning as follows

Planning – as we have often said in our conferences – is both a science, an art and a philosophy; A science because it proceeds from the systematic review of the facts based on a detailed study of the pasts of cities and their characteristics. The Planner’s next step is to investigate the causes of development or discomfort; and finally, only after a specific detailed analysis, is it possible to provide for the required improvements for the future development of the city. Observation, classification, analysis and synthesis — all required characteristics of a scientific study.

”… “But if science alone could solve the problems of city planning, urbanization could undoubtedly be reduced to a number of formulas. It is not so. Urbanism is also an art because the intuition, imagination, and composition play an important role in its application: the Planner must translate into proportion, volumes, perspectives, silhouettes, the various proposals suggested by engineers, economists, public health concerns and financial constraints. (Gunderson, 2014)

Agache school believed in “urbanism is simultaneously a science, an art and a philosophy, defined an urban agglomeration as a collective entity having an organism and functions, establishing an association between the human body and the urban body,
which gives more priority especially to circulation” (Andre, Marat-Mendes, and Rodrigues, 2012). The participatory approach suggests that to overcome polarization and societal dividedness, administrative decisions should be made through communal built processes and shared understanding of the plan (Moote, McClaran, & Chickering, 1997). Participatory slum upgrading was derived from the general participatory planning theory. It basically assembles the resources available around the needs of the residents (UN-Habitat, 2003). Residents should agree on the plan implemented to ensure that it considers their needs, values, and cultures (Moote, McClaran, & Chickering, 1997).

A successful method of implementing the participatory approach along with other interdisciplinary approaches is composing focus groups. Community development and social projects are always part of the participatory approach. It assists in overlapping the different disciplines related to urban upgrading and rebuilding like professionals and technicians with residents. The intersections between disciplines along with the insight of residents always lead to better tailored outcomes (Gaventa and Valderrama, 1999). The participatory approach begins from a conceptual base where realistic analysis and planning of the slums can be completed (Lemma, Sliuzas, & Kuffer, 2006). It is basically a system of participation to find what is “affordable, sustainable, and beneficial” for the community (Kay, 2006). As much as participatory planning seems successful, it has some drawbacks. Many developing countries suffer from unstable political environments, weak government administration, a lack of perspectives on planning, and limited funding sources weakening the success of the
participatory planning techniques (Kay, 2006, 8). Nonetheless, it is the approach that is the most successful in developing nations.

Although there is no conflict among critics on the necessity of the participatory approach in slum upgrading or demolition and rebuilding projects, there are criticisms of the ways it has been implemented. Those concerns can be mitigated by combining participatory planning with approaches from other fields. The following model is adapted from Arnstein (1969). The ladder of community development suggests that there are five different stages that the participatory approach should entail. However, it is not applied in real life projects. Resident’s efforts are usually confined to manual labor, while responsible agencies do not consider their input in project management, design, and planning (Chogreuill, 1996). Davidson et al (2007) suggest that residents’ visions are usually considered only in the last two stages. The people are being informed by the decision-makers what they should do without their opinions being taken into consideration in the process (2007).

![Ladder of community participation adapted from Arnstein (1969).](image)

Figure 2. Ladder of community participation adapted from Arnstein (1969).

The following examples show the extent to which the participatory approach has been implemented in real life projects from El Salvador. In 2001, a large
earthquake, reaching 7.6 on the Richter scale hit La Hermandad, El Salvador and affected 3000 homes (Vallee, Bouchon, & Schwartz, 2003). After the earthquake the reconstruction project took a participatory approach, but it wasn’t correctly implemented. About 300 families were selected to participate in the project, however; their role was limited to manual labor with no input in the design or planning. International and local NGOs were completely responsible for the design, and the families were only informed about it and asked if it was suitable. The project indeed took a top-down hierarchical approach. The residents were used as labor and were given food in exchange. They did not even have the opportunity to make the decision about the technical aspects of construction (Davidson, Johnson, Lizarralde, Dikmen, & Sliwinski, 2007).

**Architecture and development.** Based on the case study presented above, literature suggests that one of the major downfalls of projects currently is the lack of social relations after rehabilitation or relocation. Scholars have offered basic solutions that can strengthen the ties between community members, however; they do not completely work. Architects and designers in the Salvador case considered social and political elements in their designs, yet they did not consider the field of architecture an essential piece of the puzzle. Architectural Sociology is an emerging subfield that addresses the sociological aspects of the space before and in all design and planning stages (Beaman, 2002).

Architectural studies shows that the negative effects of urban upgrading calls for a change in the informal networking system, meaning that the way design and layout are presented need alteration (Yancey, 1974). One of the main aspects of
planning for promoting social interactions is through physical proximity. Gans states that closely related people depend on shared interests rather than physical proximity (1963). Architects developed several methods to influence people’s attitudes and behaviors in and outside buildings. Table 1 shows various methods through which this can occur. For instance, architects can create activity nodes in their projects that foster interactions between people in the community (Alexander et al., 1977).

Architecture and design have provided humans with solutions to social crises throughout history. During the middle of the twentieth century, architecture served as a tool to challenge the strength of capitalism. Architects used modernist buildings to advocate for the middle and lower classes in the society. Later in the 1900s, architects were commissioned by some European governments to construct sustainable housing units that could be reproduced for the masses. Although architects deviated from social advocacy during the postmodern era to focus more on a fashion of “starchitects,” humanitarian organizations focused on environment and societies (McGurik, 2014). It seeks to prove that architecture can produce buildings that have a political and social impact.

One of those organizations is named Architecture for Humanity. Architecture for Humanity’s architects strive to revive the “inherently social qualities” of architecture (Wilson, 2008, 30). They focus on upgrading slums in ways that do not require residents to relocate temporarily. An example of a humanitarian architect is Hassan Fathy. Hassan Fathy is an Egyptian architect who established technical methods to build units for the poor by using traditional designs and sustainable materials like mud bricks. He was named the Middle East’s Father of Sustainable Architecture. He was is
### Table 1


<table>
<thead>
<tr>
<th>Pages</th>
<th>Title</th>
<th>End</th>
<th>Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Activity nodes</td>
<td>To “create concentrations of people in a community”</td>
<td>“Facilities must be grouped densely around very small public squares…with all pedestrian movement in the community organized to pass through these nodes.”</td>
</tr>
<tr>
<td>53</td>
<td>Main gateways</td>
<td>To influence inhabitants of a part of a town to identify it as distinct entity</td>
<td>“Mark every boundary in the city which has important human meaning—the boundary of a building cluster, a neighborhood, a precinct—by great gateways where the major entering paths cross the boundary”</td>
</tr>
<tr>
<td>68</td>
<td>Connected Play</td>
<td>To “support the formation of spontaneous play groups” for children</td>
<td>“Lay out common land, paths, gardens and bridges so that groups of at least 64 households are connected by a swath of land that does not cross traffic. Establish this land as the connected play space for the children in these households”</td>
</tr>
</tbody>
</table>
an advocate against capitalism and works to provide affordable housing for the poor using mostly natural materials and specifications. Fathy also considered the culture of the people he was designing for. Figure 2 shows a sectional drawing of one of Fathy’s designs that shows how he used architectural technologies to circulate air naturally throughout the building. The house was completely made from natural sustainable materials (Laylin, 2010).

Architectural integration in slum upgrading projects cannot simply be taken from one context and plugged into another without consideration of the policies available already. Although the bottom-up approach seems to generally work in many developing countries, the need for top-down guidance is essential for architecture to be integrated. The need for architectural structures and advising is critical in reducing the expansion of informal housing as a result of upgrading (Nickerson, 2010). Overall, “what is needed is an architecture of change – an architecture that moves the field beyond the design of buildings and toward the design of new processes of engagement with the political forces that shape theories, practices, academies, policies, and communities” (Gamez and Rogers, 2008, 19). Pulling threads from different fields and serving public interest is the power of planning.
Figure 3. Sectional Plan of Fathy’s Design. Retrieved from Green Prophet.
**Sustainability.** There are some perspectives from the literature of sustainable design that address informal settlements in the developing world. In order to be able to fully address the perspectives, we should have a clear definition of sustainability in buildings. Sustainable cities provide healthy settings and room for socioeconomic growth. It is a city that has access to water and sanitation, waste disposal, roads and bridges to other parts of the city, and any other form of infrastructure (Hardoy et al., 1992). A main gap in the field of sustainable design is the separation of environmental sciences from development solutions. In uniting both, solutions maybe achieved in sustainable slum upgrading and construction (Adams, 2003).

Sustainable development is one of the key elements in the success of slum rehabilitation projects. The choice of building materials does not only improves the living conditions of the residents but also enhances the overall atmosphere and reduces climate change. The usage of local renewable or recycled materials is a key factor in sustainable, low-cost buildings (Du Plessis, 2002). Moreover, using durable materials is also highly recommended for building and construction. The use of green building materials impacts the conserves energy, and improve residents’ health and productivity.

Sustainability in housing is part of urban development. Both formal and informal housing in developing countries suffers from low indoor air quality, lack of services, and insecure land tenure. To improve those problems, closer attention must be given to sustainable urban policies found in developed countries. Construction technologies and professional support in allocating and using sustainable building materials is essential to achieve sustainable growth. Contractors and designers must
have sufficient knowledge and education about sustainable solutions to increase cities’ sustainable growth.

There are several ways to start using sustainable building materials. First, the use of natural resources and energy intensive resources should be reduced significantly. Designers and civil engineers should focus more on using naturally renewable resources instead of the materials used now like cement, steel, aggregates and aluminum. Secondly, builders should focus on using recycled and renewable materials as the main foundation of construction, in addition to using innovative construction methods. Third, builders should focus on using demolition waste from the buildings that have been torn down, and biodegradable materials (Du Plessis, 2002). Figure 3 shows the cycle of the sustainable building materials that should be considered in all construction efforts.

*Figure 4. Sustainable Material cycle. Retrieved at Green Blue Organization.*

Talking about Egypt in particular, the usage of sustainable materials can transform the building of low-cost housing. Shifting the selection of material from
gravel and bricks to abandoned local materials like cellulosic non-wood fibrous materials like “rice straw” will not only reduce pollution as they burn agricultural fields, but will also reduce the cost of buildings. Recycling it with a mixture of cement is not only low-cost, but also provides thermal layers to insulate during summer and winter which saves energy (Mansor, Srebric, and Burley, 2015).

**Successful Application of Interdisciplinary Approach Globally**

Although a set model of informal settlement development in third world may not seem ineffective in different countries due to distinct factors, some aspects could be derived to solve the issues facing slums globally. For instance, some renewable materials are not sustainable everywhere. For instance, in the Middle East, the use of sand in building construction would be more sustainable than the usage of many types of wood. However, the opposite is true in the United States given the availability of these materials and the low amounts of energy consumed in transportation. However, main concepts of planning, like public education and urban transportation maybe adapted from projects around the world. Some of the main slum upgrading projects and housing solutions available around the world are seen in Brazil and India.

Success in urban upgrading greatly depends upon the extent to which interdisciplinary approaches are integrated in the plan. Curitiba, a Global Sustainable City Award winner offered by Global Sustainable not for profit organization, is one of Brazil’s fastest growing cities. The population of Curitiba was nearly 1.8 million in DEVELOPM2010 and its population is rapidly increasing. Despite the challenging rate of urbanization, Curitiba provides a successful example of urban upgrading (Rasooli et al, 2010).
Curitiba’s success was built on integrating several factors: economic, social, urban, environmental, and institutional aspects. Curitiba is known for its effective bus system. Figure 4 shows the improvement of the bus system in Curitiba since the 1974.

Figure 5. Curitiba bus system improvement. By World Watch. Retrieved from boiseplanning.wordpress.com.

About 85% of the city’s population uses the public transportation system. Moreover, Curitiba has a 52 square meter green area per resident, which has been highly excessively increasing in the past decades. Moreover, a wide-reaching recycling program was successfully implemented. Kids get school supplies and toys for every
item they recycle, which saved about 1,200 trees per year. The recycling program also focused on employing homeless people who reside in informal settlements streets (Rabinovitch, 1992).

In managing the issues facing informal settlements specifically, Curitiba developed a self-build strategy as 60% of the workforce works in the building industry. Fifty thousand homes were purchased to house 200,000 people. Since it was clear that most of the residents would not be able to fully finish their houses in short time due to financial constraints, architects and designers’ services were provided to consultation people about the building process. Residents were asked about their needs, how many children they have, and how many rooms are they were able to afford. The city focused on social sustainability after rehabilitation by starting a project called Farois do Saver de Curitiba (meaning, “Lighthouses of Knowledge”) in the 1990s. This project built libraries and a computer labs with access to internet in every corner of the city (Soltani and Sharifi, 2012).

Efforts to improve sustainability was varied in Curitiba. For instance, environmental sustainability was achieved through green procurement, and a curbside recycling program. See Figure 5. Moreover, it was achieved socially through neighborhood planning, homeless prevention, and affordable housing provisions. In addition, it was accomplished in governance by dispute resolution, public resolution, and regional co-ordination (Keuhn, 2007).
Another recent and successful slum upgrading project took place in the slums of Yerwada, in India. The transformation seen in the area deserves to be learned from and implemented in other places. Yerwada is a successful example in the utilization of the interdisciplinary theories about slum upgrading. Yerwada employed the self-service approach suggested by Turner, and also consulted with architectural and design
specialists. Yerwada, with its participatory planning approach, was able to build sturdy, well-designed houses and areas for children to play in neighborhoods that previously had only informal housing. The project was completed without residents being displaced from the region (Fyhr, 2012).

Moreover, the project took social and economic sustainability into consideration. Planners didn’t displace shops and local businesses as most slum rehabilitation projects do. Instead, they strove to retain the existing culture of the area, focusing on vertical over horizontal expansion (Schermbrucker, 2015).

Community participation in the project was high. Continuous back and forth communication was a factor in the success of the upgrading process. Architects used real life models with paper, fabric, and wood to present their ideas to the informal settlement dwellers. Moreover, to boost the sense of community participation, local labor were hired to build the houses. This both reduced the costs of construction and improved the sense of community among residents. In addition, houses were not given for free, slum dwellers had to pay 10% of the total cost. This was affordable for most of them (Dovey, 2013). Thus, communication with the public and implementing their needs practically is the effective in achieving the goal placed by different sectors.

Overall, current barriers to communication and cooperation between fields reduces the chances for different sectors approaches to solve the problems facing residents in slums. It is evident that policy makers, international developers, politicians, architects, engineers, and sustainable designers found potential solutions for upgrading or rebuilding informal settlements due to its negative effects. The negative impacts of informal areas does not only affect the residents of informal settlements, however; they
effects the city as a whole. So, taking a holistic view of the problem is essential to its success (Magalhaes, 2012).

Looking at different examples of upgrading and rehabilitation for slum areas around the world, it is clear that they are relatively successful compared to other projects done in the past. However, most of those projects have major gaps. The gaps resulting in all of those projects is mainly dependent on the fact that interdisciplinary experts’ insights are not taken into consideration. The third chapter looks at current and potential future projects for slum upgrading or demolition and rebuilding in Cairo. It further puts the perspectives discussed in this chapter in context. In Chapter Three, a proposed process is suggested to make improvements to slum upgrading.
CHAPTER III
CAIRO IN CONTEXT

Chapter three discusses the contextual history of urbanization and slum accumulation in Cairo, Egypt. It demonstrates how the accumulation of knowledge from other disciplines can be used in Cairo to better solve the problems facing slums. Moreover, it discusses some of the problems that hinders housing development. Furthermore, it speaks more about some ways informal housing dwellers expressed their resentment. This chapter results at developing criteria from previous literature to reduce the problems facing those who live in slums today.

Development of Slums in Cairo, Egypt

In order to understand the deterioration that happened to housing and building industry, one has to understand the gradual transformation that happened to the architecture in Egypt. Since the architecturally professional buildings of the colonial era extending from the times of khedive Islamil Pasha in 1863 through the 1952 military coup, the urban atmosphere of Cairo has not developed to cope with the measures of quality housing seen in other major world cities (Hosni, 2013). Walking around downtown Cairo streets, one can see the difference in the overall aesthetics and planning when comparing older buildings to modern ones (Abaza, 2011). Architecture is a physical living memory that endures to portray the activities of the community at a certain period of time. Modern Egypt provides reference to activities dating to ancient history. Cairo’s architectural development is unique. It combines different European and Ottoman designs, as well as borrowing construction and design styles from other cultures. Innovative European techniques, specifically, were adopted by those planning
the city and integrating effective infrastructure for the Egyptian people in the beginning of the 20th century (Volait, 2014).

Considering the architectural perspective on the issues facing slums, there have been several points in contemporary Egyptian history where building technology and infrastructure flourished. The significance of the building technology introduces an idea about how informal housing was and how it became. Urban Society is always changing, but the transformation in Egypt’s urban atmosphere has been radical. Some new basic infrastructure and building materials were introduced during the early 1800s. Later, in the 1830s, there were major civil engineering reforms called hydraulic infrastructure (Mansour, Srebric, and Burley, 2007). It was followed by the construction of a major railway network in 1854. The Suez Canal, one of Egypt’s main source of income, was built from 1859 to 1869. In 1893 metallic structures and reinforced concrete constructions were introduced from Belgium. These new materials caused an expansion in the building industry and led to many new developments, including the establishment of the major high class neighborhoods in Cairo like: Garden-City, Giza, Maadi, and Heliopolis (Moore, 2014)

However, after World War II, conditions started to deteriorate. Egypt faced a shortage of the means of production and inflation. These economic factors affected not only low-income families but also middle-income ones. Government intervention was necessary in the aftermath of the war to help construct affordable habitats. Two major land development companies were encouraged to participate. The Suez Canal Company and the Heliopolis Oasis Company provided subsidized housing schemes (Volait, 2014). In 1927, 75% of the Egyptian population lived in dreadful conditions in
the countryside. Their accessibility to safe housing with rooftops, water, waste disposal and electricity was almost scarce. Some proposals were made to build houses from adobe and mud and they were successful in some Upper Egypt villages in Nubia (Sameh, 2014). In 1949, a reformer called Ahmed Husayn and an architect called Mahmoud Ryad were assigned to design houses for people with limited incomes in Egypt (Mahmoud, 2012). The project was part of a department called “popular housing” in the Ministry of Social Affairs. It built 4,000 units in suburban Cairo for low income people (Volait, 2014). While the European presence decreased precipitously in starting in the mid-1950s, the internationalization of Cairo’s architecture remained. Buildings in the city continued to reflect the heterogeneity of the religious, social and cultural heritage of Egypt, especially with its wealth of neo renaissance, classical European and ancient Egyptian styles (Volait, 2014).

Institutional Failure as a Cause of Slums

Although there are many perspectives on why slums expanded in Egypt, one of them is government failure. Slum creation is a result of institutional failure in housing policy and finance (Arimah, 2001). For instance, in the past several decades, there have been efforts by some African countries to confront the creation of slums and informal housing units (Arimah, 2001). Those efforts have always been enforced in deconstructing rather than constructing approach, seen in different cases of forced evictions. There have been continuous repressive evictions, benign neglect, forced relocation, and demolition of houses (Arimah, 2001). Several slum upgrading programs were also applied in some of the developing countries, however; the rate informal housing expanded always surpassed the rate at which upgrading programs work. The
rate at which those upgrading projects develop is thought intriguing. With all the different solutions proposed by different sectors as mentioned in Chapter Two and public interest groups, the gap seems to be in the lack of communication and implementation of those different sectors jointly.

Reforms in Housing Administration. Starting from the inter-war era, or the “Liberal Experiment Period” as some name it, slum areas became prevalent. The liberal Experiment Period expanded the gap between classes, which highly affected the housing sector. The system in which the housing industry and land use policy was administered changed. In 1952, after the Free Officers Revolution overthrew the British-backed monarchy, Egypt was divided into 14 provinces, each headed by a government official working under the Ministry of Interior. In this period, Cairo’s expansion under Gamal Abd El-Nasser’s socialist government was seen as a precursor of development, however, it was 1965 before the first housing policies, housing codes, and general zoning ordinances were introduced in Egypt. Additionally, Nasser decentralized the Egyptian government. In 1960 governorates replaced administrative units or “Moderias” (Arandel & El Batran, 1997). Decentralization was a double edged sword during this era. Although it aimed to integrate the public more, there were not enough experienced administrators to manage the new system. This led the administration to lose track of the different responsibilities they had since governorates were huge to manage (Mayfield, 2014). It was impossible for them to adapt to and provide for Egyptians as the population exploded in the coming decades. The lack of ability of formal sectors to provide land and housing to meet the needs of the low income urban population led to the development of the informal urbanization
catastrophe (Arandel & El Batran, 1997). As a result, informal urban development became an ingrained feature of Cairo’s expansion (Sims, 2003).

**Land conversions to urban uses.** The efforts at organized urban planning, especially those incorporating ethics, were absent from all the plans proposed in the 1970s and 1980s, despite the continuous development of slum areas from the early 1960s (Sims, 2003). Notably in this period, the expansion of Cairo’s urban areas penetrated agricultural areas. From 1976 to 1984, 45% of the land converted for urban use occurred 11-20 kilometers from the urban center. From the 1981 to the 1988 the loss of agricultural lands in the area around Cairo reached 340 square kilometers in this period alone. The government began to adopt policies of urban planning after 1992, when a terrorist group took over a poor neighborhood in Cairo (El Araby, 2002).

It is hard to pin down accurate estimates of the number of inhabitants on slums in Egypt. Currently, according to the Central Agency for Public Mobilization and Statistics (CAPMAS), the population of slums is around 7.5 million Egyptians; the People’s Assembly of the disbanded parliament published a larger statistic, estimating 12 million Egyptians live in slums (AbdelGhan, 2012). This can be seen through the thread of development presented in Figure 4 and Figure 5. Although the national population growth was highest in 1970s, the largest percent of national population living in urbanized areas is in 1986 as people started to move to the city.
Table 2

*Urban Development. By Census of Egypt, various years.*

<table>
<thead>
<tr>
<th>Year</th>
<th>National Population (Millions)</th>
<th>Urban Population (Millions)</th>
<th>% of National Population which is urban</th>
<th>Annual urban population Growth Rate in Intercensal Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>25.98</td>
<td>9.87</td>
<td>38.0%</td>
<td>n/a</td>
</tr>
<tr>
<td>1976</td>
<td>43.73</td>
<td>19.15</td>
<td>43.8%</td>
<td>3.0%</td>
</tr>
<tr>
<td>1986</td>
<td>48.25</td>
<td>21.23</td>
<td>44.0%</td>
<td>2.8%</td>
</tr>
<tr>
<td>1996</td>
<td>59.31</td>
<td>25.27</td>
<td>42.6%</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

Table 3


<table>
<thead>
<tr>
<th>Governorate</th>
<th>1996 All</th>
<th>2006 All</th>
<th>1996 Urban</th>
<th>2006 Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cairo</td>
<td>6,045,295</td>
<td>7,786,640</td>
<td>6,045,295</td>
<td>7,786,640</td>
</tr>
</tbody>
</table>

**Slum Typology**

Administrators use different methods to categorize the Egyptian slums. One of the main methods is categorizing informal settlements based on typology. There are four different types of informal settlements that shape the greater Cairo slums. Type A settlements are built on former agricultural lands which not only reduces the overall
agricultural spaces of the areas surrounding Cairo, but also expands the urban core without suitable infrastructure for the new inhabitants. Type B denotes the settlements built on government owned desert lands that are built without permission or contracts. Historic areas are prevalent around Cairo, however, not much attention is paid to their preservation. Those historic cores get deteriorated overtime and inhabited by the urban poor, creating Type C. Figure 6, below, shows a graphic representation of the where and how much space these different types of informal housing occupy in the Cairo area.

Figure 7. Informal Settlements Typology. By Sims (2003).
Another commonly agreed on cause of informal housing spread is urbanization. In order to understand some of those causes which pertain to the development of slums in the Greater Cairo, a closer look at the different typologies will help define some of the causes.

![Figure 8](image.png)

**Figure 8.** The Exchange between agricultural land, bare desert and urban area between 1973 and 2006. By Hereher (2012).

Based on statistics from 2011, 43.5 percent of the population lives in cities and urban villages, while 56.5% percent resided in the rest of Egypt (Indexmundi, 2014). One of the main issues concerning slum development is the lack of infrastructure and transportation from the rural areas to the cities, and even within the cities. The deteriorated transportation from the rural areas to the cities, and even within the cities. The deteriorated transportation infrastructure coupled with the high rates of traffic
makes it difficult for people to move around. The number of private vehicles increased from 0.5 million to over 2.6 million during the period from 1978 to 1991. Even when highways and bridges were built, the transportation network always lacked links and connections like secondary roads. Alleys are always less than two meters of width and sometimes don’t have outlets. Those alleys do not connect areas to each other efficiently. People have to go in big circles around bridges to be able to reach resources, making it hard to mobilize through the city especially downtown. See Figure 6. The bold black line is the highway, known as the Ring Road that surrounds Cairo (El Araby, 2002).

![The Ring Road of the Greater Cairo, By TETC 2000.](image)

*Figure 9. The Ring Road of the Greater Cairo, By TETC 2000.*
Informal Housing Built on Agricultural Lands

As mentioned earlier, one of the major types of slums are those built on agricultural lands. These types of informal settlements are one of the most harmful. In addition to the common problems that are caused by the accumulation of slums, building on agricultural lands in Cairo noticeably reduced the productivity of agriculture. Based on El-Hefnawi’s article, 80% of the agricultural lands in Egypt’s major cities are now covered with urban buildings. The units build illegally on agricultural lands have an estimated value is of $63.1 billion (El-Hefnawi, 2005). These very dense areas are generally located in a ring around the city center. They were mostly built on agricultural lands around Delta and the Nile Valley after the 1960s (Amedi, Nagler, & Wessling, 2009).

The emergence of informal housing on agricultural lands is a serious problem. Based on The Information and Decision Support Center 1993 statistics, 36% of Cairo’s informal areas were built on agricultural land. All urbanization leads to deficiency in services and public facilities, such as poor living conditions, poverty, and environmental problems. However, the physical problems of building over agricultural lands include, but aren’t limited to, incompatible mixtures of land use, reduction of green areas, unplanned use of land, and unhealthy high-density areas. In addition, it has also harmed Cairo more generally from the environment perspective. Soil contamination, increased water consumption, and deterioration of roads and transportation networks are also notable drawbacks on infrastructure. The pollution of the Nile River, rural areas air, and solid waste ineffective management are also
prevalent outcomes of the encroachment of urban building on agricultural lands (El-Hefnawi, 2005).

There are a variety of ministries and government bodies that could be involved in dealing with slums built on agricultural lands, however, they have failed to do so. Policy makers and parliamentarians realize the problem, but the government still has not acknowledged the lack of adequate agricultural land by passing laws or creating regulations. NGOs, though can’t pass law, their effort is lost among other problems. Such entities blame the encroachment of the residents of informal settlements as a lack of law enforcement, scarcity of capabilities, and uneducated behavior of slum inhabitants. On a larger scale, they also blame the general economy instead of readjusting existing housing and agricultural policies (El-Hefnawi, 2005).

Scientists and planners have a more productive view of how to reduce the encroachment of slums on agricultural areas; they propose expanding into the desert and building new cities. “Vendors and parked cars take over sidewalks for lack of space, while pedestrians walk amongst traffic” (Argaman, 2014). Some even carry a more optimistic point of view, hoping that sustainable technology especially sea water desalination and artificial rain production will make better use of the Egypt desert and reduce the overpopulation around the Nile River Delta. These are innovative solutions, [in the long run], especially that many of the people who live in agricultural villages do not work in agriculture anymore (El-Hefnawi, 2005). However, these seem overly optimistic especially with the political and economic instability after the 2011 uprisings (Argaman, 2015).
One suggested realistic solution offered by the author is allowing vertical expansion over old agricultural lands in addition to the urban regeneration of the infrastructure. This is a central alternative to building new cities. Vertical expansion will assist in reviving the agricultural urban pockets around Cairo as a basic way of stimulating the dead capital (El-Hefnawi, 2005). Some existing one and two story buildings are structurally sound and capable of serving as the foundation for vertical expansion. Clay buildings and huts, however, require attention due to their fragile nature. In one of the agricultural villages around Cairo, none of the buildings was identified for demolition and most of them were approved for vertical expansion. So, most of what was needed was infrastructure and services (Toth, 2009).

Outside of Egypt, successful efforts at stemming the spread of informal housing over agricultural lands has been accomplished through land-readjustment schemes, land sharing, and the use of participatory planning. For instance, Japan readjusted its housing policies in several cities to reduce the encroachment of buildings over agricultural land. In other developed countries, owners of agricultural lands on the verge of urban development were forced to sell their property to the government at the price for agricultural lands and not as developed properties (El-Hefnawi, 2005).

**Informal Housing in Historical Cores.** The history of the Islamic regions of Cairo goes back to the Umayyad dynasty in the 8th century. Islamic design is known for the inclusive nature infrastructure. Looking at the Islamic history of design in different locations during the different Islamic dynasties when Islam was introduced, the behavior of people in public and private spaces was considered. Islamic cities were zoned composed of residential courts, categories for the uses of the space ranging from
private, public, and semi-private, and gender specific spaces. The city also included schools and public water fountains, often paid for by wealthy individuals seeking to meet the obligation of charity in Islam, as well as public baths and shops. The Islamic cities’ designers also adopted the concept of *Al-Fina* describing the relationship between the inner space of the building and the street design and pavement (Myllylä, 2001, 217). Early Islamic city planners also adapted to hot climate in their design process. They created buildings that would remain cooler and at the same time to allow in sunlight. This is can be seen in the wooden ceilings or lattice work.

Figure 10. Downtown Cairo, Photographed by author.
Today, walking around old Cairo streets, it is impossible to ignore the drastically poor conditions of the capital city. The deteriorating housing units, overcrowding, and dilapidated infrastructure, from leaking drains to electricity cables covering streets in a web-like structure, seem to be the main feature of the historic core of the Egyptian capital. See Figure 10.

There have been efforts by different institutions to tackle the threats facing deteriorated historic cores. In Cairo, the Aga Khan Trust for Culture works to preserve and restore historical monuments in Egypt. Efforts, like those of the Aga Khan Trust, however, have always targeted major monuments and neglected old, decaying buildings and newer, informal structures built in historical cores. These structures are often ignored because of the high density and low income of their inhabitants. This phenomenon is a result of socioeconomic discrepancies and ineffective real estate policies (Amedi, Nagler, & Wessling, 2009).

One of the major methods used by the government to preserve important historic sites in Cairo is relocating people to new satellite or desert cities. A main negative effect for relocation is isolation. An example of isolation is seen among the former residents of Al-Gamaleyya, located in southwestern Cairo. In 1992 a 5.9 Richter earthquake hit Cairo and the homes of those who lived in Al-Gamaleyya suffered severe damage. Some of families had no choice but to stay in tents and mosques for at least four months. About 10,000 families were relocated to a new city outside the Cairo’s center. This area didn’t have any amenities, utilities, or services until the late 1990s. Additionally, the forced relocation caused many people to lose
their jobs. There were clear discrepancies between government pronouncements and policies, and what was implemented in this case (Florin, 2009).

The Fatimids (969-1171) were the last rulers to engage in design and urban planning in the historic quarter of Cairo. Nonetheless, expansions of the Islamic historic portion of the city continued during the subsequent Ayyubid dynasty (1171-1250). Additionally, during the rule of Mohammed Ali Pasha and Isma’il Pasha (1805-1895), some alterations took place as a part of projects to expand streets. Additionally, stories were added to some buildings and others, which were decaying, were replaced. These alterations mainly resulted in “methodically planned European urban structures” and were common during the 19th century. This was the era that saw the development of residential areas like Zamalik and Mohandessin that were and remain high class neighborhoods. Starting in the 1950s, these areas have seen massive population growth as a result of rural-urban migration. The hopes of those concerned with preserving the historic areas have been rising; there is increased recognition of the historic significance of these areas and more urban renewal strategies to accommodate the modern inhabitants of these spaces are being adopted (Amedi, Nagler, & Wessling, 2009).

The socialist approach of Nasser, Egypt’s second president, imposed new limits on the rents landlords could charge and rural to urban migration increased. This change was not sufficient, for all the rural peasants coming to Cairo and other urban areas in Egypt. The need for subsidized urban housing was clear, but was never enough. As discussed above, the lack of affordable housing led to migrants building on agricultural lands and invading deteriorating historical areas. The government failed to pay
attention to these developments due to ignorance about their significance and the high cost of restoration. With the overpopulation in historic cores, pollution became a theme of the city, infrastructure was destroyed, and the architectural frames were rotting (Amedi, Nagler, & Wessling, 2009, 5).

Overall, main historic monuments, like Al-Hussien and Al-Azhar mosques and the Citadel, are restored, however, moving further from these main buildings, the situation is precarious. The 2003 UN Habitat Report on Human Settlements considered the historic core deteriorated because of the unpaved alleys, the poverty of the population, and the constant automobile traffic through the area (Amedi, Nagler, & Wessling, 2009).

**Informal housing on public desert land.** By default, desert land in Egypt is government-owned. Usually developers need to go through many processes and collect considerable official documents to obtain permission to use desert lands for private purposes. Before the 1990s, there were two common types of informal settlements on government owned desert lands. One is the expansion of tribal communities onto these lands. The second, which is more common, begins with legal investment; the land is bought and built on. This investment, however, is followed by a building process that produces low quality structures, leading to informal housing. Moreover, overtime people expand illegally on to neighboring desert lands. Those buildings on built in areas officially owned by the government are characterized by better quality services like water, electricity, and roads for their residents, but less infrastructure (El-Batran and Arandel, 1998).
Currently, there are a variety of ways people infringe on government-owned public lands. One is the “quasi-legality of desert encroachment” defined as farmers reclaiming those desert lands near their agricultural lands under a system called wada’yad, or hand claims by individuals (Sims et al, 2000, 19). There have not been sufficient policies or consistent enforcement capable of preserving the state’s desert lands. Other state-owned land was exploitated by politically powerful individuals or institutions in a campaign called “takhsis” or privatization. Another common way of taking over government-owned desert lands is critical masses. For several areas in Cairo called Manshiet Nasser, Ezbet el Haggana, and El Fostat, mass encroachment was the way government owned land was taken. The lax enforcement and lack of funding to evict the encroachers has left the area with informal housing. Currently much of the desert lands surrounding Cairo are consumed by informal settlers (Sims, 2000).

*Deteriorated urban pockets.* Buildings built during early 20th century in areas, with European colonial influence, like Masr Al-Kadima, Al-Sakakinim and Al-Tera’s Al-Tawfikia are today precariously deteriorated urban pockets. These areas, although are small in percentage of Cairo’s neighborhoods, are possibilities of informal housing expansion. As there conditions deteriorate, they will be a potential of informal house due to their proximity to the city. With the perilous land tenure state of affairs, people seek these two-to-three stories buildings due to their cheap rent. Most of those houses are warned by eviction forces, moving the settlers to public housing estates (Elewa and El-Garhy, 2013).
Prior Perspectives on the Issues Facing Slums in Cairo

The issues facing slums in Cairo have been studied by local and international researchers extensively, however, due to the lack of technology and limited resources of developing nations in general, these issues persist. Although there is considerable effort exerted on analyzing policy, few researchers take design into consideration. The following paragraphs include perspectives from various literature pieces focusing on Cairo, Egypt.

Ghoniem’s research and her co-authors asks to what extent to which cities are sustainable. She argues that sustainability can be used as way to balance environmental, social and economic needs and that it should be used to look at the problems facing slums. Ghoniem and the co-authors discusses briefly the need for maximizing recycling in both during construction and after residents have moved into the neighborhood. She also focuses on social factors and residents’ engagement in community development, along with the need for local business. Ghoniem and her co-authors discusses those three main concepts through two main cases of slums in Cairo, Egypt (Ghoniem, Hassan, and Salem, 2014).

The first case these authors consider is Zeinhon, Cairo. Zeinhon, a large area of 50 acres located in the heart of Cairo, is an example of a ‘deteriorated urban pocket’. Zeinhon was originally established as a temporary emergency housing area for aftermath of different disasters. Later, it attracted residents from lower economic classes due to its proximity to the central business district, medical, and educational facilities, especially with the booming urbanization in the latter half of the 1900s. Zeinhon was a very dense area dotted with random kiosks and randomly placed rooms.
until a rehabilitation project started in 1999 Egypt (Ghoniem, Hassan, and Salem, 2014).

The rehabilitation project in Zeinhon was managed by the Egyptian Red Crescent, the sister organization to the American Red Cross. The project took into consideration stable and efficient infrastructure, unit designs, and green areas. However, over years, the project lost political support and the loss of green areas and public spaces accelerated. This resulted from the lack of economic development planning for the space. Most of the building materials used didn’t allow for vertical expansion due to their weakness; residents admitted that they had to use horizontal expansion to create small businesses, encroaching over public and green areas.

The new project was not as socially sustainable as the older Zeinhon was, despite the informality of the neighborhood prior to the rehabilitation project. The ties built over years were broken when people were relocated. Additionally, prior to the project about 81% of the residents of Zeinhon worked in local, self-managed businesses were demolished by the creation of the new city. The new design offered some shops, but they weren’t enough to accommodate all residents of the neighborhood (Ghoniem, Hassan, and Salem).

The second case is Manshiyat Naser, one of the major slum settlements in Cairo that fits under the category of informal settlements on desert land. It is also known as the area of the Zabalein, or Garbage Collectors. The total area is around 850 acres and has about 262,050 inhabitants live in the Muqqatam hills in Cairo’s Eastern desert where Manshiyat Naser is located (Tekge, Oldham, and Shorter, 1997, p.141). A rehabilitation project aimed at relocating the residents to a safer place called Suzan
Mubarak Buildings consisted of five phases and finished in 2008. Similar to Zeinhon, the structure of the project started deteriorating soon after it was constructed due to a lack of services and maintenance. One major flaw in the project was the cheap materials that were not sufficiently durable to enable vertical construction. Moreover, the lack of social sustainability was also prevalent in the case of Manshiyet Naser. People lost their relationships and connections with those in their community when they moved to the Suzan Mubarak Buildings. About 35% of the residents said they felt less secure, despite the iron gates that are a key feature of their new houses, due to the lack of cooperation between the people to protect themselves. There is also a lack of privacy because the balconies of different units in the new housing structures are very close together (Ghoniem, Hassan, and Salem).

Mohamed and Gammaz (2012) studied the case of Darb Alahmar, district located close to Al-Azhar Park in the middle of Islamic Cairo. The area has at least 65 registered monuments and is known for the artisans who run shops along streets full of pedestrians, an environment which creates a strong social fabric. The project in Darb Al-Ahmar was undertaken by the Aga Khan Foundation to rehabilitate the district’s physical, and economic shortcomings. The authors of this study asked whether the project could offer real solutions to the existing problems or if it would only treat the issues facing the district superficially (Mohamed and Gammaz, 2012).

Mohammed and Gammaz summarized participatory approach used in rehabilitation projects. The sustainable integrated approach is used to ensure long term economic development and the revitalization of social bonds. It also focuses on the need for agencies to collaborate to rehabilitate the area. Moreover, they are essential
when dealing with deteriorated historic cores and planning for older areas. The reason to support those two approaches is the need to upgrade selectively and adaptively different buildings based on their uses. The two approaches are also used to preserve not only the buildings or monuments, but also the social culture of the historic core (Mohamed and Gammaz, 2012).

The paper discusses several successes of participatory approaches, such as the diversity of participants, the transparency in decision making, and the clarity of which organizations are accountable in the case of failures. However, results differ from one community to another even when the collaborative approach is used due to the timing of implementation, the strength of stakeholders, and the credibility of process with the community, and the support from authorities. Mohamed and Gammaz also discuss the challenges that these participatory approach face in Cairo slums, where few people in the local, regional, and national levels are active participants. Moreover, centralized administration and vertical hierarchy of the Egyptian government hinders rehabilitation projects for slums even when international organizations like the United Nations manage the projects. The case study concluded by stating that rehabilitation projects undertaken by international NGOs rarely experience see complementary efforts from the government. The NGOs are usually unable to create projects that are capable of sustaining domestic political interest in the project (Mohamed and Gammaz, 2012).

Overall, projects by international NGOs aimed to make drastic improvements to the physical conditions for the residents of informal districts, however; they did not consider socioeconomic factors in the designing the space and, therefore, failed to provide optimal sustainable building conditions to accommodate the residents.
Problems Hindering Development of Slums

There are many societal implications resulting from the informal settlements in Cairo. Accelerated urbanization along with expanding poverty and widening social divide are some reasons behind slum formation in previous years. These changes have degraded the environmental conditions and have implications for the health of and social cohesion among residents (Araby, 2002). Studies show that up to 48 percent of Egypt’s population live in poverty (Sims, 2003). This high rate of poverty has helped to cause the expansion of informal housing, while, at the same time, slum conditions contribute to the growth of the number of Egyptians living in poverty.

Poverty

There are different types of poverty which interact with the housing options of available to individuals. On one hand, income poverty is often seen as a result of living in slum conditions. It is closely related to asset poverty, which is a key characteristic of the inhabitants of ashwa’iat, urban slums. On the other hand, in the countryside, even the poor may own agricultural lands, which are healthy and productive enough to provide income for their families (Sims, 2003). As discussed above, the expansion of slum areas into agricultural lands at the edge of cities is diminishing the number of people who have such asset wealth. The disappearance of agricultural lands is thereby further increasing income poverty for those in Greater Cairo’s settlements (Sims, 2003).

Unlike other countries where informal settlements are a defining feature of the social structure, Egypt’s urban poverty is not concentrated in certain geographic locations. The divide between the urban poor and the ultra-poor are usually found clear
among middle and high-income families. See Figure 8. This phenomenon, although it might appear healthy to have socio-economic heterogeneity, causes destabilization in the urban population because poor people always perceive the privileged people to be their enemies.

Figure 11. Social Divide in Cairo. Photo by: Mosa’b Alshami. Retrieved at www.aljazeera.com.

**Fertility Rate.** Based on CAPMAS, the fertility rate is 2.73 births per woman. This rate is similar to other Middle Eastern countries, but higher than those found in Latin America, North America, Central Asia, and Europe (Ahram Online, 2012). As a result, over 33% of Greater Cairo’s population under the age of 15 years compared with a 37.6% nationally (Sims, 2003). With the large fertility rate, it is harder to take care of children. It became hard to help infants grown healthily in such areas with poor sanitation and waste disposal informal infrastructure. There are always steep barriers
for the residents of the shanty towns to access health and emergency services due to monetary and social issues that lead to debilitating health problems (Sclar, Garau, & Carolini, 2005).

**Education.** Also, one of the main implications of shanty towns on residents is the lack of educational resources and capabilities. Studies showed that neighborhood and related contextual effects directly influence schooling through various pathways. One of the main issues is that parents themselves, despite being major proponents of educational advancement for their children’s lives, are not educated. Thus, they cannot aid their children once they reach middle, secondary, and higher levels of education. Parents are unable to provide the supervision and time needed for successful development of their children. In addition to the low level of educational attainment among parents, the low incomes of slum residents also contribute. Both parents and their children work in low income informal sector jobs in order to survive. As a result, children’s school attendance is affected. This is more pronounced among boys, as they are expected to leave school after reaching a sufficient level of education to find work (Montgomery, Grant, Mensch, & Roushdy, 2005).

The educational and economic factors are exacerbated by the insecure connection between secondary school education and stable public sector jobs. This connection was once strong, before the mushrooming of urban populations. Since the link between schooling and upward mobility deceased, a sense of frustration, hopelessness, and resentment has developed, making child labor a legitimate solution to providing income for the families (Montgomery, Grant, Mensch, & Roushdy, 2005).
Unemployment. The lack of opportunities in rural communities lead people to move to the city. Moreover, high rates of urbanization lead to an excess of labor force in Cairo. The creation of employment can only be strengthened through informal private sector and enterprises. This can be developed by providing developing human resources, to address environmental issues of concern to the poor, and to target women. Providing such societal infrastructure will lead to the development of human resources. This is seen as not only the responsibility of central and local government but also civil society and donor community (Sims, 2003).

Corruption. Corruption is the “public enemy number one” (World Bank, 2013, 1). Corruption is always part of the daily conversations in Cairo. One of the main questions concerning slums is why development foreign aid does not help in developing life conditions for slum dwellers in Egypt. The most probable answer to this question is composed of two parts: corruption and misuse of financial matters. Corruption the use of public entities and resources to benefit private sectors. Based on Transparency International’s Corruption Perception Index (CPI), Egypt is perceived to be quite corrupt. See the figure 12. for exact rank. This figure shows the CPI measuring the levels of public sector corruption in 176 countries.
Corruption to benefit private sectors includes but is not limited to poor educational institutions, lack of medical service, elections in which votes are purchase, and the need to bribe government officials to obtain basic bureaucratic documents (Corruption, 2014). Perceived corruption has a direct relation with low levels of development during non-democratic rulers; evidence suggests that countries that experienced at least 40 years of democracy are less corrupt than those who experienced 20-30 years (Waterbury, 1976). Egypt, following the Free Officers’ Revolution in the 1950s, continued to fighting for the accountability of its rulers. Even after the 25th of January Revolution, the corruption practiced by Mubarak’s regime kept Egypt with a GDP per capita of $6,200 (Fadel, 2012).
Violent and non-violent protests. As a result of all the previously addressed matters, there have been different phenomena through which slum dwellers have sought to bring attention to their struggles. Some of these were in the form of peaceful protests while others engaged in terrorist acts. One of the main issues that led to the Egyptian governments’ recognition of the slum dwellers concerns is the use of violence by Islamic fundamentalists. Some poorer urban areas are seen as “breeding grounds” for Islamic fundamentalism. In 1993, when Islamic fundamentalists threatened the security of overall security of the country, including the privileged classes, did slums come to be seen as ticking bombs. The accumulation of grievances and as disaffected minorities are pushed to the outskirts of the society they accumulate grievances against those allowed to live in the mainstream. Even as they create their own self-sufficient communities in the slums, these people are treated with neglect and exploited by their governments. This state of neglect is marked by the absence of social welfare services and contributes to feelings of frustration and the general sense of not belonging creates a lack of trust (Upshur, 2009).

Revolutionary aftermath. Another way slums aided political movements are protests and the 2011 revolution. As a result of the previous disconnection discussed, slum dwellers found a chance to express their discontent through the 2011 protests. Since government officials and state media has always considered shanty towns as “black stains” and attributed to them sets of ills—crime, drugs, and ‘backwards’ behavior (Sims, 2003), this was the crack within the society that they expressed their resentment through. They chanted: bread, freedom, and social justice. Some of these slum dwellers saw these protests as the means to capture their lost rights.
After law enforcement disappeared from the streets after the first few days of protests, groups of slum dwellers managed to take, by force, 4000 housing units newly built in one of the satellite cities (Serag, 2011). This was a result of their need for housing and their distrust of the government to provide any for them. This moment of unrest provided them with a chance to capture some of their rights. Due to continuous broken promises by successive Egyptian dictators on development issues, people lost trust in the government.

After the 25th of January revolution, people were hopeful and desperate for change. However, four years after the revolution, spirit are again low and the trust gap between the public and the government has grown. Trust in the government is a crucial factor in slums development in any of the developing world countries. Lack of trust threatens community participation which is a major factor in developing slums. Moreover, it decreases the sense of belonging, yet does not encourage people to maintain the quality of their spaces. And as mentioned before, maintenance is one of the major reasons why renovated slum areas turn back into slums.

**Proposed Strategy of Development**

Eradicating Cairo’s slums immediately is unrealistic. However, implementing successful interdisciplinary techniques from different fields will allow permanent slum rehabilitation even if it is applied to a small area. The strategy proposed in this research is broad enough to include different types of typologies and cases, yet, it is specific enough to include essential criteria in developing informal housing. The essence of this strategy is the incorporation of personnel from the various disciplines to fully plan,
implement, and monitor the rehabilitation plan. The strategy focuses on the planning section of the project.

The strategy starts by composing a team of regional planners, urban planners, infrastructure technicians, civil engineers, architects, landscape architects, sustainability designers, interior designers, policy makers, human resources, and politicians. The creation of the team should be proceeded by closely studying all the flaws in the region from the perspective of each of the disciplines. After discussing the results of the studies, policy makers and politicians should conduct an informal election for representatives in the community. After representatives are elected, the development team should ask them what their needs are, discuss with them potential solutions, open their eyes to potential needs, and finally check if the proposed plan fits their needs. Continuous follow up meetings should be held with the representatives of the community to ensure that the application of the plan matches the community’s expectations. The team should use the local network of the community representatives to promote self-labor.

Team members should be assigned specific roles, based on their areas of expertise. Politicians and policy makers must address the political, budgetary, and legal aspects of the project. They should monitor the community representatives’ selection process. Moreover, regional and urban planners should develop a comprehensive plan for the city, explaining the new advantages, the difficulties of implementing the new plans, and how to solve them. In addition, planners should take into consideration both regional and community concerns. Landscape planners should manage green areas and make sure there is enough public space for community
interaction. Also, the infrastructure technician should ensure the ease of mobilization and transportation in the new community. Adding and adjusting existing roads and alleyways will ensure the community’s connectivity with the city beyond its borders. Furthermore, it is recommended that architects, interior designers, and civil engineers work together to find practical, efficient designs to expand vertically instead of horizontally. Sustainable designers should revise, step by step, the sustainability of the whole project, in terms of cost and environmental impact. They should make sure that the space can be easily maintained by residents after the project is complete. Through the collaboration of people from all these different fields in the planning process, the possibility of failure or return to low quality housing is lower than developing a slum rehabilitation project from a single disciplinary perspective.
CHAPTER IV

CONCLUSION

The researcher studied the cases of slums based on a typology established by the Census of Egypt. Those types were dealt with differently in the past. One of the main methods used to addressing the issues facing slums are through eviction, which did not turn out to be effective. Eviction created more slums in other areas leading to an expansion of slum areas instead of diminishing them. Other projects of slum rehabilitation were done in an effective way but did not serve the need of the public. With the lack of continuous maintenance, those areas were reverted back to slum areas in a short duration of time. Moreover, the same happened when newly designed places where built. A lack of associated infrastructure including transportation made those places inefficient for their residents. Also, those new dwellings did not reach the poorest of the poor.

The problems caused by informal settlements are not only political; they are also based on design, policy making, community participation, and mainly sustainability. Developing countries around the world implemented several solutions to face the mushrooming of problems associated with slums. Although few projects worldwide were successful, every designed program for slum rehabilitation provided a building block in the academic research of this complex field.

By exploring different cases from developing countries while focusing on understanding some downfalls of developmental projects in Egypt, I came to the conclusion that developmental agencies and NGOs took different perspectives on how to deal with slums. Many changes have been made to land use policy, developmental budget allocation, and community integration.
policies in developing countries. However, these changes seemed to only solve parts of the puzzle. Most of the projects did not lead to the expected results.

The importance of collaboration between different disciplines science and arts is essential. Some of the techniques suggested in Cairo is pushing towards vertical expansion instead of horizontal. However, in taking architectural and civil engineering aspects in perspective, it becomes clear for planners that the building infrastructure and bases are not strong enough to be able to hold vertical units. This is a result of the lack of quality in the original informal construction or it is a result of people living in historic zones (or inner cities?) that cannot be used now days.

One of the most important aspects discussed in this paper is community participation and volunteer self-labor. However, from analyzing previous literature and case studies, community participation only referenced community participants as labor instead of understanding their concerns and needs to convert it to a comprehensive plan. This created a gap between the newly rehabilitated slum areas and the needs of the dwellers.

Other projects have done the opposite. Project managers left the entire responsibility on the dwellers, even when it comes to technical architectural and civil engineering matters for which they needed consultation. Both cases turned out to be ineffective in slum development projects. Although the situation is complicated and failure was mostly the outcome of most of the slum rehabilitation projects in Cairo, the solution might be as simple as a small gap in the field.

Egypt is suffering from a high demographic concentration in the city compared to rural villages. Many Egyptians hope to develop rural areas without destroying agricultural lands and building over it. Also, Egyptians wish to eradicate the cityscape of informal housing that covers huge portions of Cairo and give the opportunity to the majority of the population to live in
standard quality houses. However, the efforts by the people and government are not productive because of the lack of collaboration between representatives of different fields.

The paper explores why informal housing does not improve even after all of the efforts to do so. The research results in Egypt suggest that, just as in several other developing countries, different disciplines’ perspectives are not integrated or coordinated - leading to unproductivity and unsuccessful outcomes. The significance of the findings is to grab international attention for a potential solution to the issues facing slums. It is hoped that eventually the dots will be connected between the different solutions available to make the outcome as efficient as possible.

**Implications and Suggestions**

The first implication also calls for collaboration among fields of disciplines. The study opens up the door for in-depth research about each of the rings connecting every two fields in the process. Exploring the common areas between architecture and policy making, sustainability and politics, or civil engineering and infrastructure. The overlapping of disciplines will give researchers creative and practical outcomes to face major city planning issues in both developing and developed countries.

Another direction for further research would be to take the strategy suggested in this paper further. The strategy proposed in this paper is broad enough to work on housing and city areas globally, but specific enough to pay attention to all the details that might help maintain the initial purpose of the project for decades. Another important aspect of the strategy is its lack of cultural specificity. Although it is seen through the lens of Cairo’s slums, it could be adjusted to fit any other country facing a similar problem. So researchers studying different locations may further tailor the suggested strategy to perfectly fit the situation of the area they are studying.
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