

**An-Najah National University
Faculty of Graduate Studies**

**Transformation of Urban Morphology:
The Case of Qaffin, North of The
West Bank**

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Transformation of Urban Morphology: The Case of Qaffin, North of The West Bank

By

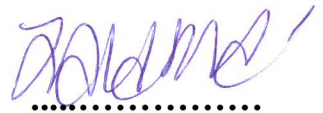
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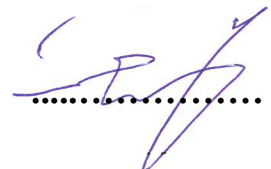
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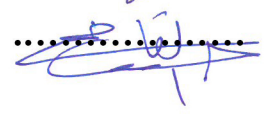
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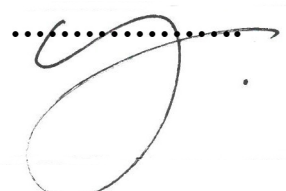
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III

Dedication

To my two wonderful daughters, Alya and Maria, who've made the submission of this thesis almost impossible.

Acknowledgment

My deepest gratitude goes to my doctors and supervisors, Dr. Zahra Zawawi and Dr. Mohammed Atmeh who guided me through this thesis and gifted me with their vision, knowledge, and help.

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My last but not least gratitude goes to my husband and life partner Ashraf, who's been entirely supportive and most importantly, understanding through this entire trip.

Thank you from the heart.

الإقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل عنوان

Transformation of Urban Morphology: The Case of Qaffin, North of The West Bank

أقر بأن ما اشتملت عليه هذه الرسالة إنما هي نتاج جهدي الخاص، باستثناء ما تم الإشارة إليه حيثما ورد، وأن هذه الرسالة ككل، أو أي جزء منها لم يقدم لنيل أي درجة أو لقب علمي أو بحثي لدى أي مؤسسة تعليمية أو بحثية أخرى.

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degrees or qualifications.

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التاريخ: 23/12/2021

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**Transformation of Urban Morphology:
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Abstract

The thesis addresses the recent transformation of the urban form of Morphology in the northern towns of the West Bank. To be more specific, those located on the 1967¹ border. It traces the changes that have occurred to the urban form of these towns between 1948-2020. The fierce political struggle which has plagued the country for the past century has propped the change in the economic and social situation of these areas. This particular change in dynamics have been the determining factor for the new urban setting in these towns. These towns have evolved from their indigenous rural landscape origins into new morphed fragmented towns and villages. In addition to a dense and repressed urban form, growing within limited and confined boundaries.

Qaffin town, located in the Tulkarm governate on the 1967 borderline, has distinct and unique urban form. It was selected as a case study for the thesis. The case study analysis focuses on the transformation of Qaffin's urban development and urban form. And that's by tracing and identifying the dynamics of change between 1948-2020s. It explains how political events in town have changed. Moreover, it shows how the change in economic and social factors have contributed to the transformation of Qaffin's urban form. This is achieved by conducting both quantitative and qualitative methods and collection of data

¹ Before the six days war this was referred to as the Green line, or the 1949 Armistice border, which separated the land which were occupied by the Zionist militias from the rest of Palestine and neighboring countries (Syria, Lebanon, Jordan and Egypt).

for theoretical construction, historical archiving and analysis. And that's through literature review, field research, semi-constructed interviews, taking photographs and notes on the distinct qualities of this town and analyzing maps and satellite photographs. The Analysis has shown how the occupation and physical dissection of the town borders have eradicated the agricultural identity of Qaffin through the past years. These factors forced change in occupational life of the town, driving people into the labor market. This change in economic life has connected the town with the neighboring 1948 occupied Palestinian towns and cities². It affected the social life of Qaffin and carried with it some building and construction techniques that have manifested in buildings. Therefore, it has changed the town's urban form into a new combination between the old and the new.

Key words: Urban morphology, Urban form, Urban transformation, Qaffin Town, Palestinian towns, Building fabric.

² Refers to the Palestinian land which was occupied by the Zionist militias in 1948. Note that the West Bank and Gaza Strip were also occupied in 1967 by the illegal state of Israel.

Chapter One

Introduction

1.1 Thesis Overview

The vernacular and indigenous architecture of rural Palestine, which was the predominant style in the country, encompassed the Palestinian landscape with uniform and coherent forms. The existing environment was the main influence on the vernacular character of traditional architecture in Palestine. As Palestine's traditional architecture began to disappear and urbanity spread at the expense of rural areas, the remaining villages became towns and developed new, diverse and fragmented urban forms. Those forms differ drastically from north to south in the West Bank. Reflecting the spatial isolation of Palestinian communities caused by the country's political struggle. (Ghadban, 2000) Villages located in the same regions share common characteristics and similarities. Therefore, in order to develop an understanding of the contemporary rural scene in Palestine, it is advisable to study and analyze each zone separately. This thesis will focus on the northern border towns of the West Bank and examine how the urban form has changed in the rural northern towns of the West Bank and how political, economic and social factors have contributed to transforming their indigenous identity into a complex urban form with a disintegrated and non-homogeneous architecture.

The town of Qaffin, chosen for the case study in this thesis, is located in the very north of Tulkarm governorate. It's right on the 1967 borderline, figure (1.1). Like the rest of the West Bank, its recent history has been full of political problems and historical changes, a number of different authorities have taken over the rule of the West Bank, each

causing major changes in the areas. Qaffin has shown these changes in its urban transformation, as the urban form of Qaffin has constantly changed and is very different from its historical origins. The topographic layout, blocks, street pattern, building pattern have changed but not as drastically as the building fabric. Today's Building fabric in Qaffin displays a mix of color, materials, forms and architectural styles. The historic yellow limestone has morphed into a neon fuchsia, and small, decades-old farmhouses stand next to massive, multi-story commercial buildings.

The urban form of Qaffin is only one part of this urban transformation, which includes many factors such as the rapid increase in population and the occupational shift of local people from agriculture to work in the areas occupied in 1948. In this study, the morphological process of the urban form of Qaffin is analyzed and explained.

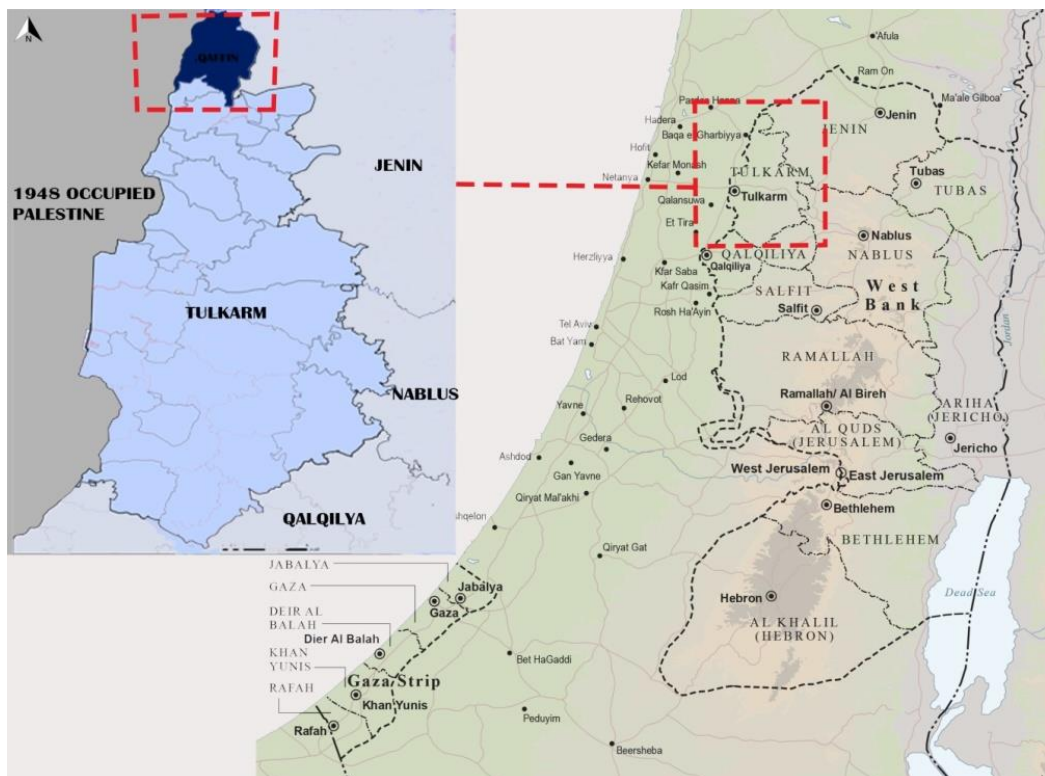


Figure 1. 1 Qaffin location in Tulkarm Governorate

Source: Elections.ps, edited by author

1.2 Problem Statement

Qaffin town has a unique and unusual urban form, especially its building fabric which has shifted and transformed through multiple stages through the last century. This thesis intends to address the transformation of urban morphology in Qaffin between 1948-2020. Several aspects of urban development such as the political and economic situation will also be discussed to determine their connection to the urban morphology of Qaffin.

The Palestinian recent history of wars and political conflict have affected the town directly. Large portions of land were lost during the 1948 and 1967 wars. The new boundaries and new terrains of the town have changed accordingly. The people of Qaffin were greatly affected by this loss, as they relied mostly on agriculture, and the dissected lands affected greatly their vernacular lifestyle. (CHF, 2013) And thus a large section of the Fallahin³ found themselves without land and a source of income, so they were compelled to look for an alternative, in this specific case it was the labor market. This change in vocation has brought many social, cultural, and urban changes along with it, and urban form has mirrored this change. (Amiry, 1989) To understand the transformation of urban form in Qaffin, the precedent factors need to be carefully studied.

Qaffin town is selected as a case study for several reasons. First: the town has a significant geographical allocation that connects directly with the 1948 Occupied Palestine. At the same time, it's located on the farther northern edge of Tulkarm which makes it quite far from Tulkarm Urban center, the distance which takes about 20 minutes in car, has alienated Qaffin from the city. Second Qaffin is separated from near and neighboring towns by vast fields and barren mountains, providing it with real physical borders that make it easier for research and analysis propose. While neighboring towns

³ Arabic for peasants, farmers or laborers in agriculture. A term widely used in the Middle East as a reference to citizens of rural areas. (Kholoussi, 2005)

are interconnected with each other as the urban sprawl has wiped out the interconnected fields and replaced it with buildings. Thirdly, the Political events that have occurred in Palestine have all had a direct effect on this town's geographical extent. As the town has lost large tracts of land through the ongoing political struggle. Lastly, the town is famous locally for its master builders and trained laborers, who make the vast majority of Qaffin's working force. The town is also referenced for its unique architecture and colorful buildings. All those factors have contributed to choosing Qaffin as the case study for this thesis.

1.3 Thesis Goals

- This thesis intends to analyze and track the transformation of the urban form of Qaffin town by documenting the change and difference of the qualities and characteristics of urban form in Qaffin in a metrological context.
- This thesis aims to define and study political, social, and economic factors which have contributed to the transformation in the urban form in Qaffin.
- Also, it aims to document and specify the general theme and physical qualities of the building fabric in Qaffin through different past periods of the last century, starting from 1948 until this present day. By describing the geometric forms, the structural systems and elements used, and the identifying architectural qualities of each period, and the constant change in used materials.

1.4 Research Questions

This thesis intends to tackle several questions regarding the changing rural scenery in Qaffin, such as:

- How did the Urban form of Qaffin transform between 1948-2020?

- What are the factors that have contributed to the change and transformation of this urban form?

1.6 Methodology

This section will present the methodological process adopted to provide answers to the research questions of this thesis. This thesis employs both qualitative and quantitative approaches to identify and categorize the urban form of the selected case study.

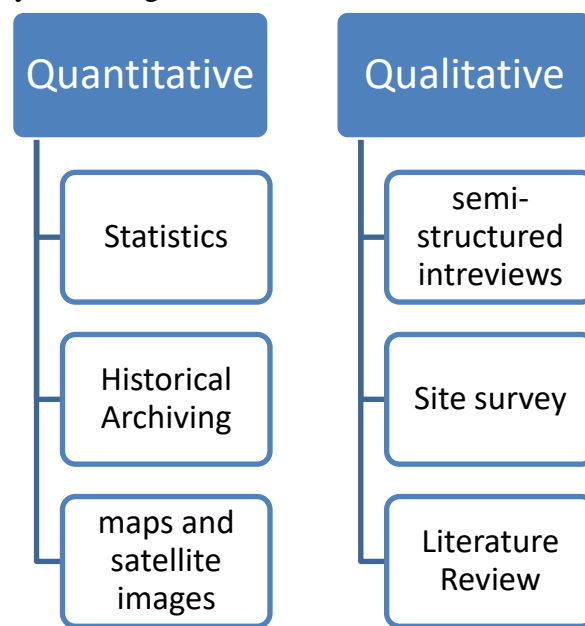


Figure 1. 2 Types of methodologies in thesis

Source: author

Quantitative methods include collecting statistical information about Qaffin such as: population increase, town area decrease, statistical numbers regarding housing units, number of buildings, housing unit size and etc. The data demonstrated the building growth rate in Qaffin through the period between (1948-2020). Through the same period economic data was collected to analyze the economic situation of Qaffin. Data regarding

social situation of Qaffin was used in this thesis to draw a clearer image of the Town and its residents, it however wasn't used in an analytical frame.

The thesis employs several qualitative methods as well. First, the literature review has provided us with several analytical frames and approaches from several schools of urban morphology which are the English school, the Italian school, and the French school. Several methods and approaches were adopted from each school and some were modified to suit the Qaffin case and the data available. Reviewing the works of M.R.G Conzen has provided us with the Conzenian morphogenetic approach which uses multiple sites in the town plan and analyze it to explain the transformation of urban form. This approach has also been based on French school of methodology which analyzes the existing town plan without the need for historical maps. It has been seen as best suited for the case study of Qaffin as there are no historical maps available of the timeline chosen for the thesis. And therefore, three different zones through Qaffin's town plan were selected to be analyzed and studied separately of each other to show the transformation of Qaffin's urban form.

The Building fabric, as an element of urban form is analyzed through this thesis mirroring the approaches of the Italian school, adopting Caniggia's approach of analyzing buildings as a way of evaluating the morphogenetic process of the townscape. It focused on the historical development of architecture and building fabric of cities and town to explain urban morphology, by defining Buildings as a scale for urban morphology. Caniggia, has not only studied the aesthetical value and architectural style of buildings, he also studied the construction techniques used, buildings' materials, and the elementary components of buildings. Thus, through this thesis a metrological analysis is used to explain the transformation of the building fabric of Qaffin, by

selecting houses of different periods between (1948-2020). Those houses are analyzed and studied based on Caniggia's approach. The selection of houses doesn't imply that those are the only or most used building typologies of such periods, rather it illustrates the form and styles used for houses and how the architecture of such buildings have changed overtime.

The houses selected didn't merely serve to display housing forms of Qaffin, but also to explain the human perspective of such buildings, recording how the owners interact with their homes, what influence their decisions, who chooses the design, historical reports of past incidents, and describe their users experience. This was achieved through conducting non-structured interviews with the house owners. For every single house chosen, several members of the families were interviewed, except for the Rashid house as the house has been vacant since 1965. Instead, an interview was conducted with a store owner next to the house.

The analysis of urban development of Qaffin which focused on the political, the economic and Social situation of Qaffin, was based on statics and published data. It relied heavily on reports of the locals of Qaffin. Semi-constructed and non-constructed interviews were made with locals who were homeowners, construction workmen, municipal workers, governmental workers, and decision-makers. To take a general comprehension of the local scene, several locals were introduced and interviewed to gather an understanding of the general social characteristic and life quality of the town. For more extensive and subject-specific interviews, locals were chosen based on the assumption that they have a direct impact either on the urban form of the town or its urban development. That's why the interviews focused on construction men who worked

in the 1948 occupied Palestine, as more than 20 construction men were interviewed either on person or through a phone call.

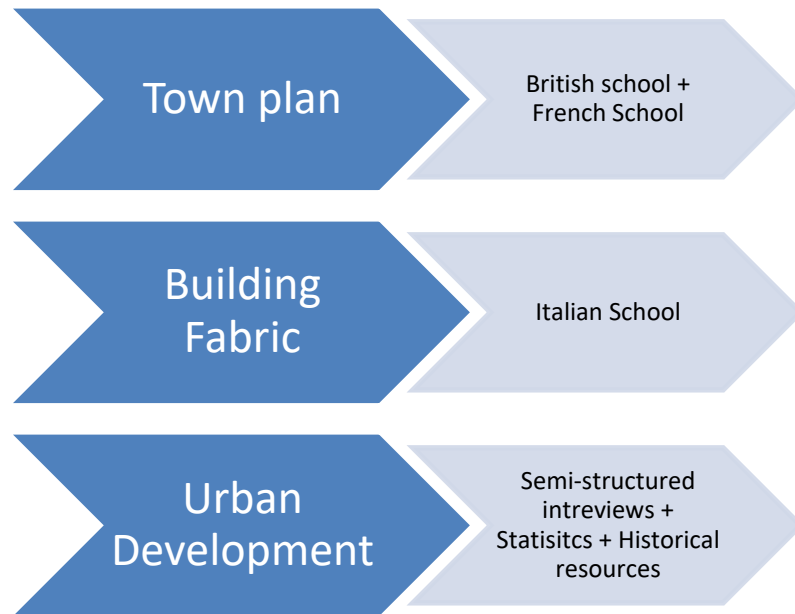


Figure 1. 3 analytical framing

Source: Author

The design of this thesis is shown in figure (1.2), and it is initiated by data collection and literature review, by reviewing works on urban form, urban landscape, and urban morphology, and studying analytical models and methods developed by scholars and researchers.

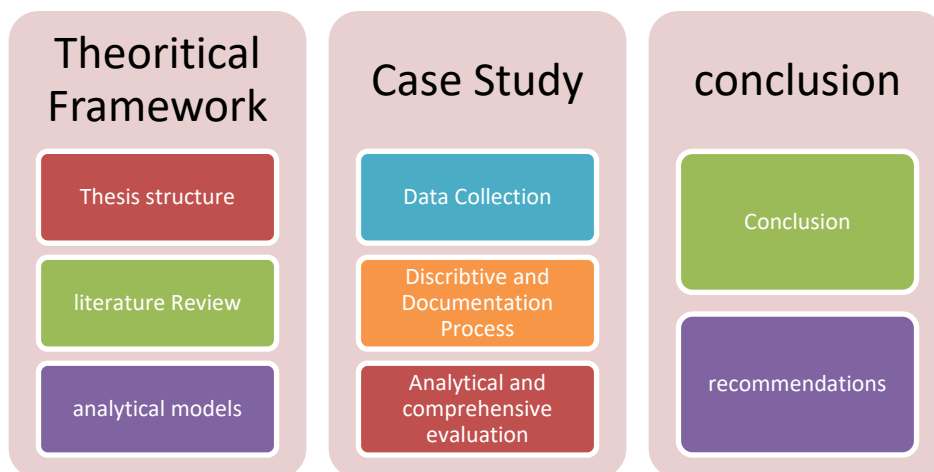


Figure 1. 4 Thesis design

Source: Author

1.7 Thesis Structure

This thesis is divided into the chapters:

Part 1 Methodological outline

- Chapter one “Introduction”:

Defines the subject of this thesis, by presenting an overview of the problem which has to do with morphology in rural architecture. It sets and defines the thesis objectives, by drawing the hypothesis and stating the thesis questions. It also outlines the methodology which is used to fulfill the purpose of this study.

- Chapter two “Urban morphology and factors of change”

This chapter reviews the literature on urban morphology and urban form, the morphogenetic approaches which could be used through analysis. It also reviews economic, political, and social factors effect on urban form.

Part 2 Case Study

- Chapter Three “Qaffin town Urban development”

This chapter introduces Qaffin as a subject for the study and reviews facts and information about this town. it also presents a historical review of the town’s development. This chapter also provides data and lays an initial framework for the analytical course that should take part in the following chapter.

- Chapter Four “Urban morphology of Qaffin town”

Through this chapter, urban form is discussed through morphogenetic approaches using maps and information that was collected through field visits in Qaffin. In addition to analyzing the town’s building fabric, through an examination of different houses from the town, along with data which was collected from different sources which helped to provide an image for this process of change.

- Chapter Five “Conclusion and recommendations”

This chapter answers directly to the questions presented through the thesis, it also provides several recommendations that could help future researchers and decision-makers.

Chapter Two

Urban morphology and factors of Change

2.1 Urban Morphology

Urban morphology is a field concerned with studying urban forms and tracking the processes by which the urban form changes over time. As a discipline Urban morphology started taking shape as a separate academic field at the end of the 19th century, and it could be connected to German geographers who started its early roots. Otto Shluter who worked in the field of geography between 1911-1959 is considered to be the father of urban morphology, as his pioneering vision has imagined the city as an extension of its surrounding landscape. Since then the field has grown and developed several methods of studying characters and perspectives of urban form and describing and explaining urban landscape. (Whitehand, 2007)

Although the field has been started by geographers, it grew to encompass several other fields such as urban planners, urban geographers, urban designers, and architects. (Siksna, 2006) Urban morphology is a field that has participated in encouraging logical thinking into urban planning, as it articulates the historical development of urban areas and employs it in making planning decisions about the current and future urban development using integration and sharper analysis. The analysis which is conferenced with urban morphology isn't only concerned with the general layout and zoning of urban areas. It specifically deals with buildings and individual plots, and can be as specific as dealing with the complexities of architectural forms. (Whitehand, 2007)

Urban morphology and urban landscape formation has been explored by academics through the last century yet not completely and not thoroughly, as there is a problem

between syncing the theoretical base of the field to the practical application of it, in many cases the historical development of towns or cities is hard to acquire, and in other cases, morphological analysis and research is a time-consuming process and has complicated procedures, as the analytical work isn't only limited to the physical nature of urban areas but it also integrates it with the societal values of their communities. (Siksna, 2006)

M.R.G Conzen has presented the field with several theories and models such as the model for urban plan analysis. And J.R.W Whitehand had his strong influence on the field by the late 1970s, as he studied the evolution of form and related them to the process of diffusion and innovation, as well as his work on volume construction and their connection with economic phases. (Bergamini, 2016)

2.2 Urban Form

Urban form is the simplest description of a city's physical characteristics and can be defined as a spatial configuration for fixed elements, related closely to scale, and describes the morphological attributes of urban areas at different scales. Urban form is directly affected by the transforming actions of human behavior, along with environmental and physical influence with their historical content, which creates the physical manifestation of the city. (*Oliveira*, 2016) Through the Urban form, the study of cities Built-up area and the constitution of the urban fabric progression is made possible, and the urban fabrics interface which is composed of different elements such as Squares, streets, buildings, and public space, which can be more clearly illustrated in the following figure (2.1). (*Bergamini*, 2016)

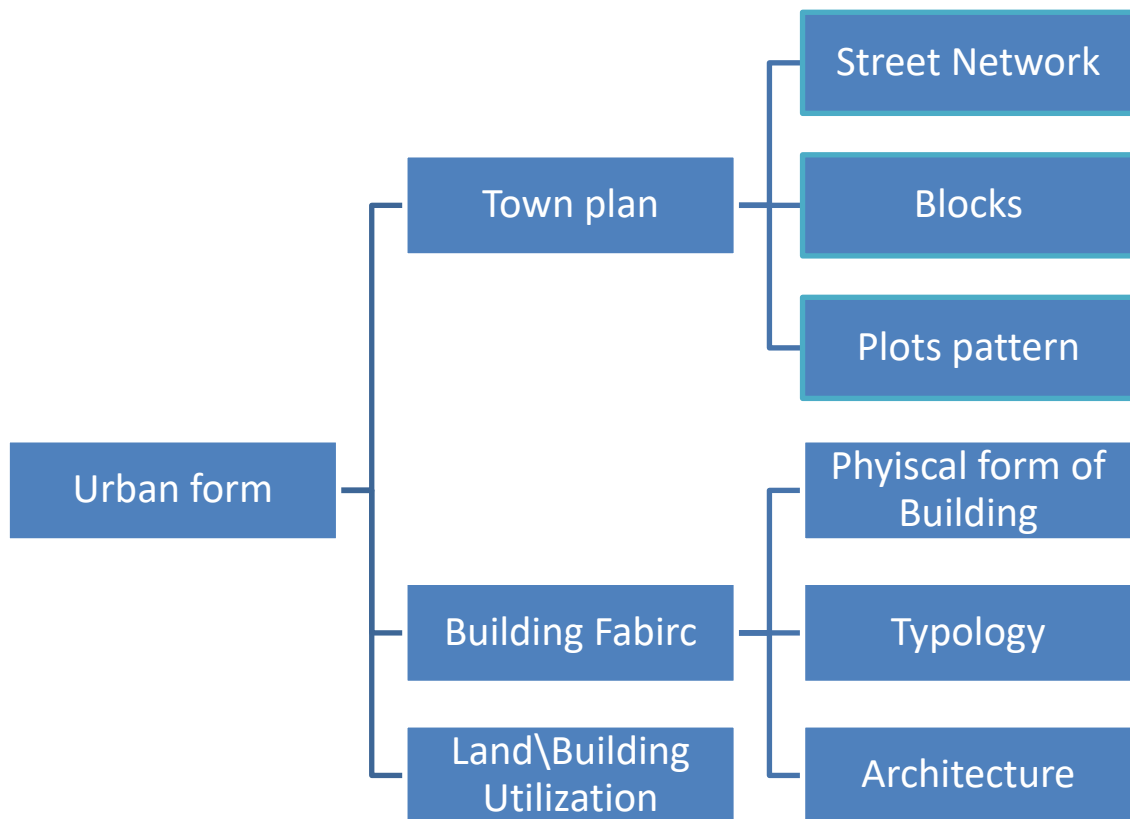


Figure 2. 1 Elements of Urban Form

Source: Adapted from Bergamini, 2016

The study of the urban form field has been conducted based on a wide range of different disciplines such as geography, planning, economics, sociology, architecture, and history. Which all have contributed to developing a fundamental framework of interdisciplinary and diverse concepts. It is important to understand that scholars of urban Form have been affected each by their region of studies. For example, German scholars have focused on the nuclei origin of towns and the lateral planned and natural development of towns, hence the works of Hassinger, Geisler, and Siegfried. While French scholars were more focused on the cultural landscape and how to have the transformation of man over nature have created the Agricultural city. The U.S.A Scholars such as Dan Stanislawski, studied the origins, historical evolution, formation of urban plans and plans, and building types. (Bergamini, 2016)

2.3 Morphogenetic Approach

The First morphogenetic approach was initiated by Otto Schluter in the mid of 1910s, as he had done work on multiple German and other European towns maps. As he produced several layouts of the town's urban ground plans that analyzed different urban elements such as street patterns and historical urban cores of cities. His work although primitive, but has set the town's ground plans into distinct parts and founded the core feature of urban morphology, and planned the approach that was used later on the next century by several geographers and urban planners including M.R.G. Conzen. (Whitehand,2007)

In the early twentieth century Hugo Hassinger's work on the city of Vienna in 1912, mapping the various architectural styles of the city buildings, See Figure (2.2) along with Walter Gieslers in 1918, whose work of mapping the buildings based on function and number of stories in Danzig town, gave the morphogenetic approach its early key features of mapping several physical forms in cities and urban areas. (Whitehand,2007)

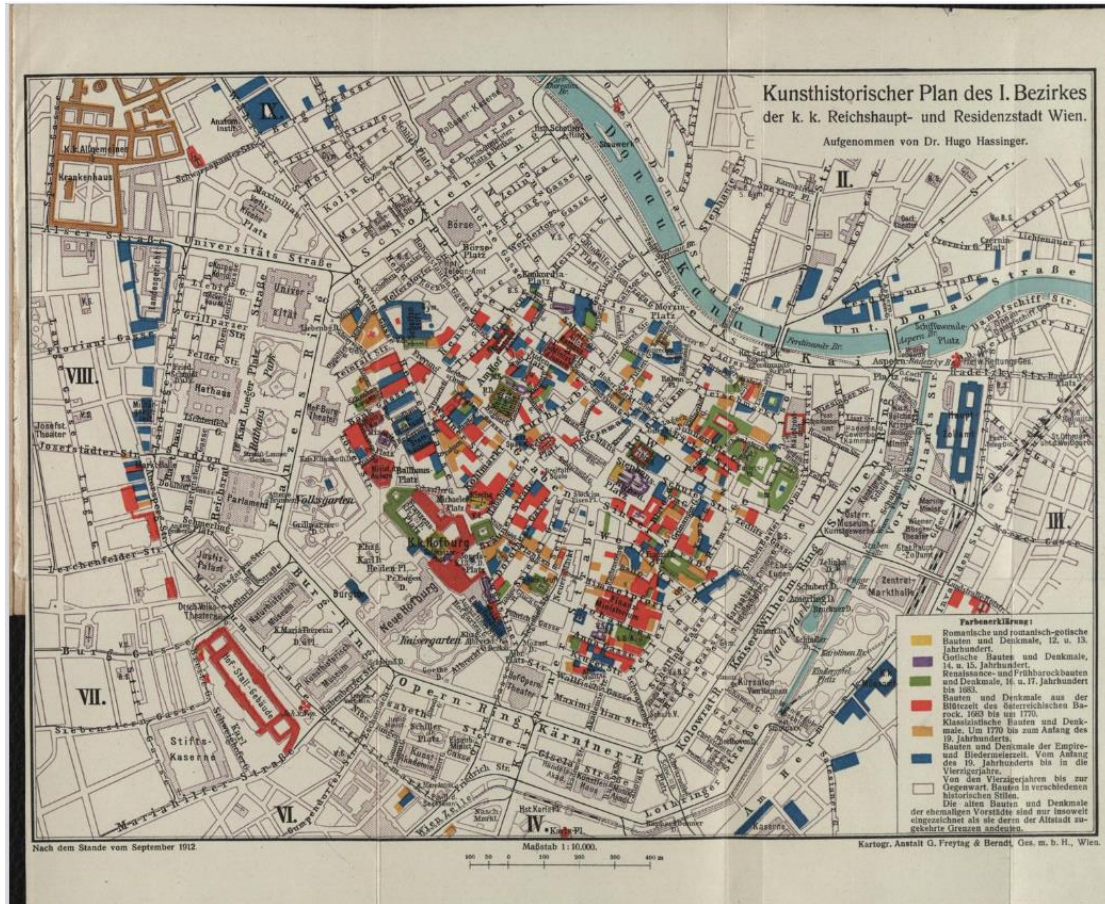


Figure 2. 2 Art and historical ground map of Vienna by Hugo Hassinger 1912

Source: Von Hugo Hassinger, 1912

This previous work has influenced Conzen who became one of the most important geographers in the 1960's to work in the field of urban morphology, as he proceeded to do extensive work on mapping urban areas, concerning building types and number of stories in 12 different German towns. His work had been critical in the 20th century to understand and manage the urban landscape. The method of Conzen's morphogenetic approach had the following characteristics, terminological precision, and cartographic representation. (Whitehand, 2007)

Conzen has presented the field with newly developed concepts such as dividing urban form into the ground plan, building fabric, and land and building utilization. The ground

plan includes the site with its blocks, street network, plots pattern, which is referred to as an urban grain, Notice Figure (2.3). (Kropf, 2014)

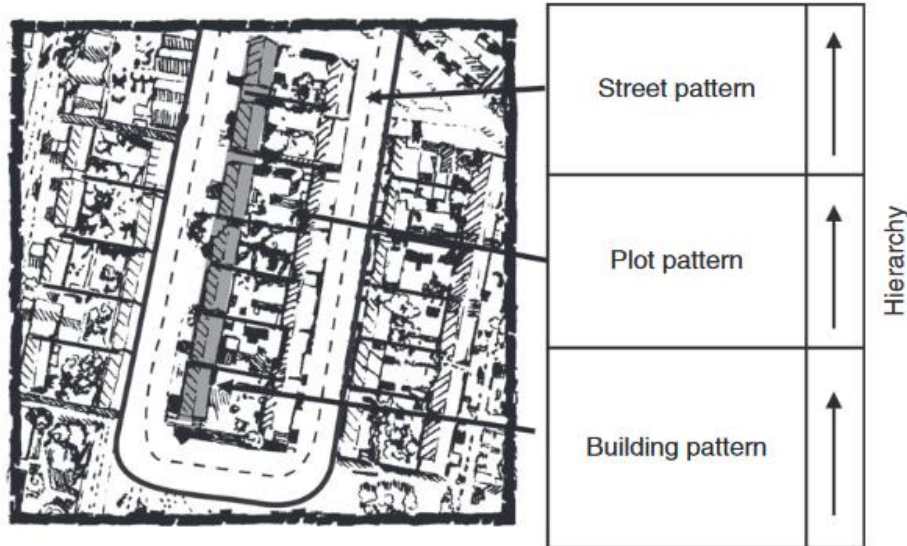


Figure 2. 3 Basic Elements of Ground plan

Source: Kropf, 2014

Street network and street pattern focus on the arrangement of a group of streets on the ground which could be identified into four groups according to today's contemporary town planning as 1. Grid, 2. curvilinear, 3. curvilinear super block irregular, 4. contemporary, as shown in figure (2.4). While in many rural communities and old city centers irregular and deliberate irregular patterns can be found. (Bergamini, 2016)

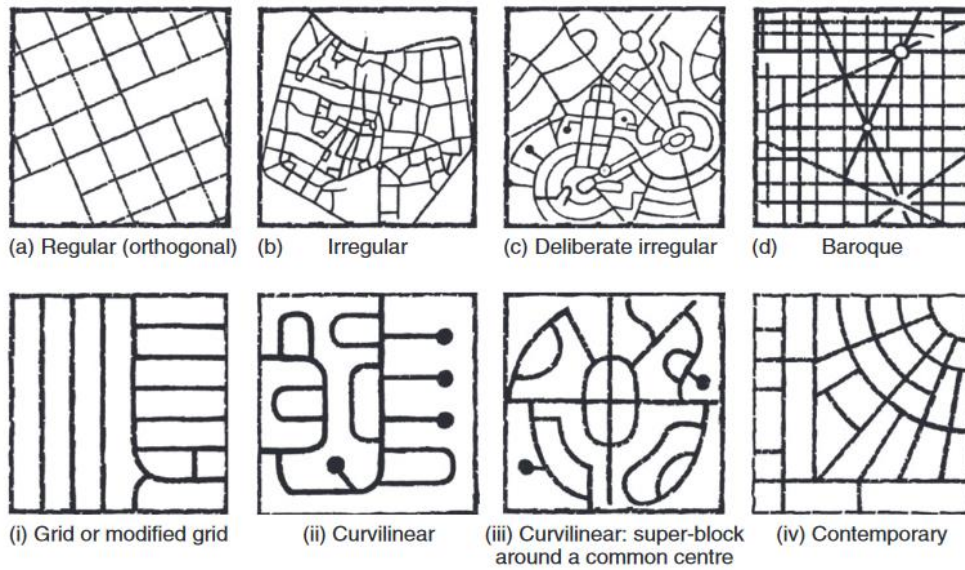


Figure 2. 4 Types of Streets Pattern

Source: Filion, 2012

As for the plot pattern which directly corresponds to the streets pattern, and it includes the land division and subdivision forming plots, parcels, and lots. Plot patterns organized with the surrounding street patterns can develop specific streets blocks which can be shown in figure (2.5). As for the building pattern, which is shown in figure (2.6), it shows the arrangement of a group of buildings in a block and the form of each building, which can be specified as linear alignment and nonlinear clusters. (Zhang, 2013)



Figure 2. 5 Street Blocks Types

Source: Loaf and Barthelmy, 2014

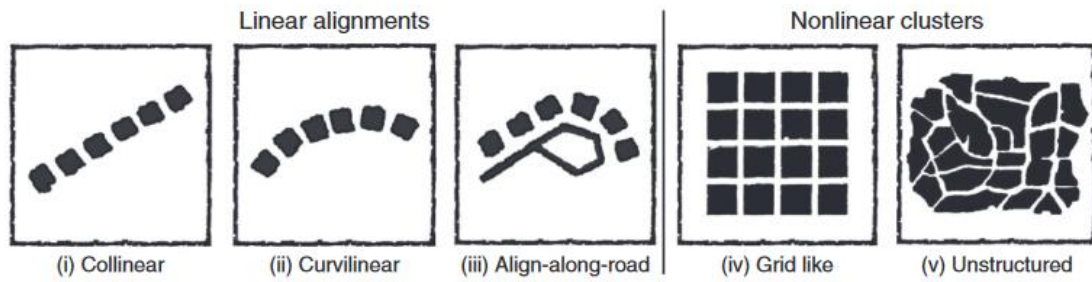


Figure 2. 6 Building Patterns

Source: Zhang, 2013

As for the second element of urban form which is the urban fabric it works with the three-dimensional forms of buildings, which can also be classified into different types being:

1. open and loose urban fabric with low building density, 2. scattered urban fabric, 3. compact, 4. semi-compact urban fabric, see figure (2.7). At last utilization of land and buildings maps the function of buildings and the patterns of land use that is given or assigned to the land by urban planning comities, which is either residential, commercial, public space, recreational, industrial, or mixed-use. (Kropf, 2014)



Figure 2. 7 Types of Urban Fabric

Source: Sigroi, 2011

Conzen in his work also introduces a term that is called “morphogenetic priority”, which connects elements in the ground plans to a specific life span. For example, some old

streets in towns carry the same characteristics for long periods and are still recognizable overtime, while buildings in his argument are more prone to change over time and carry shorter life spans. This relativity of change in ground plans is important to the analysis of urban morphology in a historic base as it adds more complexity and hierarchy to the analysis. (Whitehand, 2007)

Morphological regionalization is another morphological approach that is the most important approach which recognizes the historic-geographical structure of the urban landscape. The process identifies and maps the urban regions that are fundamental to understanding the structure of urban change in cities. This approach was also initiated by M.R.G Conzen in the 1950s, and later on, furtherly developed by Whitehand in the 1970s. (Gu, 2019)

The following diagram in figure (2.8) was developed by Bergamini in 2016 to analyze and classify urban areas based on the type of each element of the urban form, which combines different works and classifications of previous authors. This will help summarize easily and directly the physical qualities of an urban area is to directly present an image of the area intended for study. Parts of the diagram can be used later on in the case study for the analysis of the town plan of Qaffin, identifying the type of Qaffin urban fabric by assigning a type for plots, buildings pattern, street network, and also analyzing land use arrangement in the town plan. This analysis will help develop an understanding of the urban form in Qaffin.

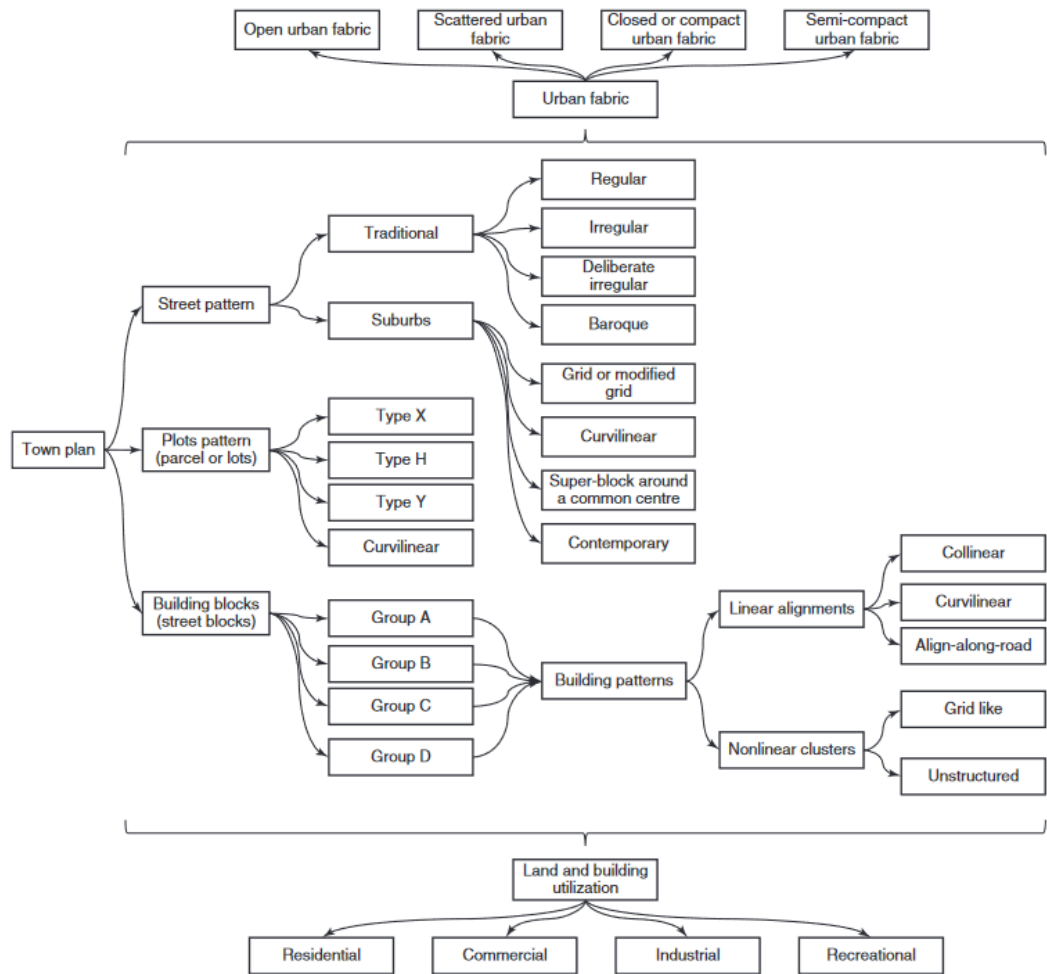


Figure 2. 8 Synthesis of Urban Landscape Elements

Source: Bergamini, 2016

2.4 Urban Fabric Morphology

The urban fabric which primarily consists of plots, streets, constructed space, and open space, is the interactive relationship between those elements. The morphological analysis of urban fabric examines the different relationships between those elements one by one. However, researchers emphasize different relationships between the primary elements in their analysis based on their research interests. (Levy, 1999)

Some studies of the urban fabric morphology are based on a hypothesis that certain laws dictate the organization of urban fabric through different periods, as some categories and certain aspects remain constant, which means there are roles to the transformation over

time which dictates changes to the urban fabric. In this hypothesis, there is an interdependent relationship between a part to the whole, which is building type to the urban fabric. Studies have searched a non-casual and dialectical relationship between building types and urban fabric, which makes the focus of a large section of morphological analysis. (Hamaina, Leduc, and Moreau, 2012)

This morphological analysis between building fabric and urban fabric contributes to building a greater understanding of the historical urban fabric and the less addressed modern urban fabric. (Levy, 1999)

For Conzen the building type is one of the three main elements which comprises the “town plan”, which he considered a crucial part of the urban fabric. The other two main elements are the street system and plots pattern. In an urban area, Conzen saw that a certain combination of those elements yield unitary areas which he termed as “ plan units”. (Conzen, 1969)

Gianfranco Caniggia, An Italian architect who adopted an organic approach and was one of the founding fathers of the Italian school of urban morphology, saw the relationship between building type and urban fabric as a “typological process”. The cumulative process that begins with an elementary cell. The typological process leads to the creation of functionally different pseudo-types, who then lead to basic fabric, that extents to create particular fabric along hierarchal pathways. Caniggia developed a “direct and indirect” interpretation of form for buildings design. (Strappa, 2003)

Many studies have used the approach of typological analysis of each previously mentioned element of the urban fabric. In the next section, more focus will be shed on the building fabric and the identification of building types.

2.4.1 Building Fabric and Architecture

Conzen's Development of townscape morphology has focused on two main aspects, first the formative process, which described the economic, social and cultural effect on built form from past to present. The second is Form's persistence within the townscape. The townscape's historicity is expressed through its basic elements, town plan, building form and land utilization. (Conzen, 2004) Building fabric and architecture are important components of building form. The aesthetical evaluation of building fabric is conducted through the stimulus of its dominant features. The three-dimensional components of Buildings, such as exterior walls and roofs, along with floor space and building-type are all important aspects to take into consideration when studying the morphogenetic process of Building fabric. (Sanders and Woodward, 2015)

Gianfranco Caniggia defined buildings as the fourth morphological scale, subsequent to territory, town and aggregate tissue. This scale is determined by the dominant construction technique and the available building materials. the building's elementary components (Bricks, walls, beams and roofs) can be measured and evaluated for analysis of townscape. (Sanders and Woodward, 2015)

The analysis of form will be reduced to selecting single elements and their organization in the physical context of architecture. (Stankovic, 2018) The forces that affect the building form can be divided into three categories, those are syntax; elements combination, and arrangement with each other. Semiotics, which deal with those elements' meaning and their references. And lastly, pragmatics deals with how those elements affect and are affected by people. (Yilmaz, 1999)

As building form is a three-dimensional entity, its primary units of point, line, plane, along with the solid shapes, have given a basis for geometric shape in architecture through

history. They change within space based on the conceptual sense, and they can add aesthetical value and conceptual and symbolic dimension to the architectural language. And for this reason, architects and humans through time have been using these forms and rearranging them in combinations and different spatial organizations that could reflect their ideas, visions, and lifestyle. (Kotsopoulos, 2011)

2.4.1.1 Structure and Configuration

Spatial and structural systems which underline the morphological process, can be mistaken at times as the sole effect of architectural progress. For example, the change from bearing walls to skeletal structure has changed shape of buildings significantly through history. This is why structure of buildings is fundamental to the morphological process in architecture. However, it's very important to note that although structural systems can provide development to architectural development, it is important to keep in mind that it is possible to incorporate a new structural system into a building without changing its architectural appearance. And a new spatial system does not automatically grant for a new design or a new building style. (Rubin,1984)

Engineers through history have been seeking a spatial structure that requires least input of energy and material, and that can give the highest performance, so they can apply it as an ideal model for buildings. Through this process of ever improving structural systems. That form has adapted to the changes creating multiple configurations and patterns. At the same time, optimizing configuration of the building elements can achieve higher performance to the structural and architectural design of buildings. (Pearce,1995)

It's also important to take regional considerations when discussing the structure effect on architectural development. Because in many areas, structural systems are restricted due

to manufacturing or economic and industrializing factors, and thus their possible geometric forms are consequently restricted. (Menges,2012)

2.4.1.2 Form and architectural design

Design is a process of visual creation that is executed through 4 stages: conceptual, visual, relational, and practical. The conceptual stage contains the following elements: point, line, plane, volume. Those elements aren't visible and they aren't present realistically, since the fact of their existence contrast the idea of their conceptuality. When those conceptual elements turn visible, then we can categorize them as visual elements, such as shape, color, size, texture and light. (Yilmaz, 1999)

Relational elements deal with interrelationship and placement of the design shapes, such as position and direction which can be perceived and measured, while others such as space, and gravity are immeasurable and can only be felt. As for practical elements, they underline the designs content and extension, they are a representation of meaning and function. (Kotsopoulos, 2011)

Architectural design functions through arranging those previously mentioned elements, one by one or one to one, and by considering the elements relationship with each other and with the whole form. The design strategies are suitable for all two and three dimensional architectural forms. (Yilmaz, 1999)

Geometry is considered the fundamental science of forms, and so it contributes to composition and architectural design process. And composition in architecture is started by elements and their mutual relations. And by time, architecture and geometry had developed some geometrical rules which formed the basis of architectural composition. Conceptually those strategies can be listed as: contrast, balance, unity, proportion and

rhythm. And if considered for visual elements, those devices would be: axis, symmetry, datum, hierarchy, transformation and repetition. (Meiss, 2013)

2.4.1.3 Floor plans morphology

Plans morphology studies buildings plans in terms of its rooms' adjacencies, juxtapositions, shape and size. They also calculate the ways you can circulate through the building using doors, halls, corridors and the way spaces or rooms are defined using walls, or opened with windows and doors. The analysis is applied in the shape of colored graphs that represents sets of spatial relationships and adjacencies. (Steadman, 1983)

The reason why rooms adjacencies can fall into specific patterns in buildings, is that usually adjacency is needed for sharing the same services, like plumbing or water sources. Or they need to be set apart to achieve privacy, or for sound and noise insulation purposes. It is also important to study the rooms relationship with the exterior space, and their orientation in relation to views and sunlight or wind direction. Or if rooms with certain functions tend to be positioned next to particular regions around the plan, such as a garden or a street front or a neighboring building. (Steadman, 1983)

The floor plans adaptability and flexibility are additional important aspects which affect the form of buildings. Some buildings have the capacity to accommodate another function without the need to alter the building's interior or exterior. Also, not all buildings have the flexibility to be altered physically, by changing the interior configuration through removing, or introducing interior walls or segments. Also, flexibility can refer to the expanding possibility of the building, weather vertically or horizontally. (Steadman, 1983)

2.4.1.4 Materials and arrangements

The previous discussion of geometrical constraints and structural abilities must not eliminate the most important face of architecture, and that is design. The architect is the one who chooses and decides by which course the building is constructed according to his artistic purpose. Also, of course, his choice is directed by the clients taste and functional requirements. The clients taste and needs can be taken as a representation of the community and social preferences. (Steadman, 1983)

Buildings will face many changes through their life cycle, the changing needs of its users, or external factors demands. In order to adapt to such change, buildings are expected to go through some alterations which might affect their final form. Other external factors include building legislation change, such as disabled access requirements or fire safety regulations. Also, climate change may affect the building construction, and the materials used. Another factor of change is market forces, which is brought by the introduction of a new business style, or working forces shift, this change usually affects the architectural and structural system of buildings. (Manewa, Siriwardena, and Ross, 2016)

While most forces of change which occur are unpredictable, understanding how buildings are affected and how they respond to such changes can provide us with an insight on how we can anticipate their adaptability. (Chester and Allenby, 2019)

2.5 Schools of Urban Morphology

As mentioned before, scholars working on urban morphology were highly influenced by the environment and the region of which they studied, and this resulted in different methodologies and approaches to the point of changing the principles of the discipline of urban morphology. And according to this variance, Moudon has categorized them into

three leading schools of thought on urban morphology those being, British school, Italian school and French school. (Moudon, 1997)

2.5.1 British school

Also known as the Anglo-German school of urban morphology, which was founded by German geographers at the end of 1900's, and later led by M.R.G Conzen in the 1960's, who has German origins and upbringing but has moved to the United Kingdom and have done an extensive body of work on English towns. This is why some scholars such as Larkham claimed that this school should be announced German, based on Conzen's German origins and his use of the Germanic approach of morphogenetic belief. (Larkham, 2006)

The British school methodology had four main aspects, Firstly, the studying of urban form and dividing it into three main components that are: town plan, Building fabric, and land use and buildings' utilization. Secondly, the analysis of socio-economic context into the limits of urban morphology, which was investigated by Jeremy Whitehand in 1981, who connected the field of urban morphology with urban economics. Thirdly, studying urban development process. And lastly, Metrological analysis of town plots. Those aspects are interrelated with each other, and connect the human experience with its physical built environment. (Whitehand, 2014)

This school is mainly focused with urban-geographic morphogenetic approach, Conzen's initiative work on the 1930's has focused on townscapes, as it was Conzen who recognized the division of Townscape into town\ground plan, which comprises of plots, blocks, streets and buildings. And recognized building fabric, and then building and land utilization. He analyzed city maps, making form, building function, streets pattern,

network system, and blocks pattern as he investigated each element separately and in relation to other elements to study how they are affected or restricted by each other. The analysis methodology which Conzen used was based on a metrological approach as he analyzed the previously mentioned elements in an evolutionary and historical context, to illustrate how cities physical configuration can develop and change with time. It was those concepts he developed about the process of urban morphology that founded a school of thought on his work. (Whitehand, 2001)

Later on, he developed two essential concepts in the morphology discipline, First the fringe belt concept which refers to the formation of an urban edge at the periphery of a town or a city throughout a period that had a slowdown of urban development or was growing gradually, See figure (2.9). The second concept he developed is “Burgage cycle”, shown in figure (2.10), which indicates the action of progressive filling of urban area with buildings terminating the clearings and vacant spaces, only to be followed by another cycle of clearing down in a redevelopment intention. (Sadeghi and Li, 2019)

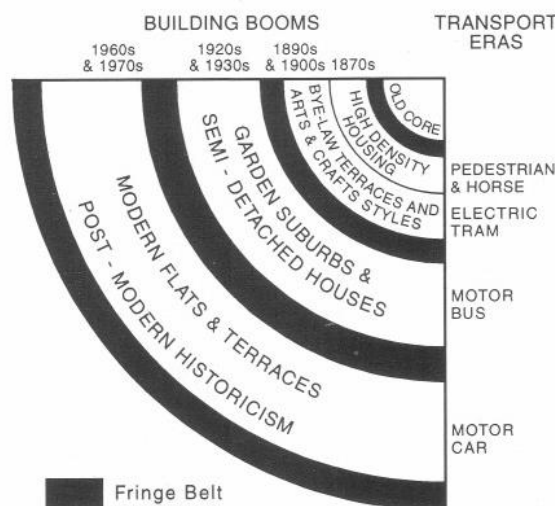


Figure 2. 9 Innovation and building cycles model

Source: Whitehand, 2001

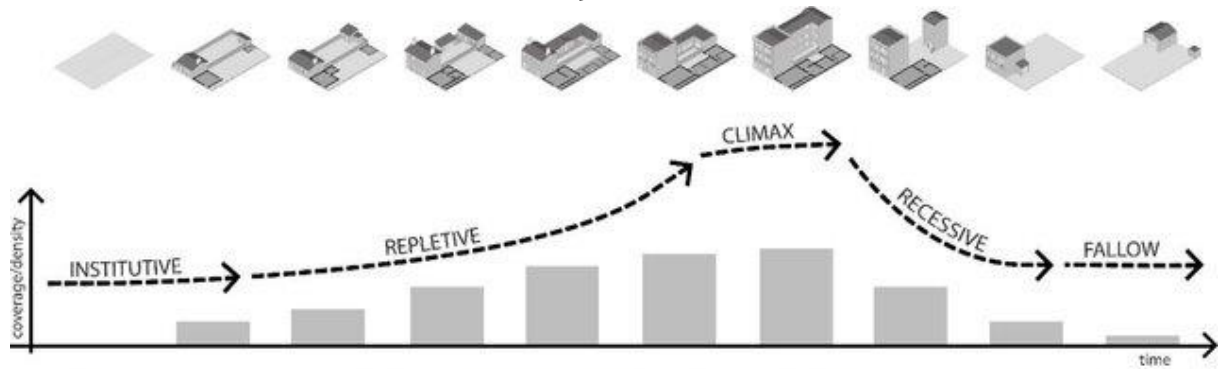


Figure 2. 10 Different phases of the Burgage Cycle by Conzen (1960), expressed as variation in building coverage over time.

Source: Feliociotti, Romice and Porta, 2018

Another morphogenetic approach of M.R.G Conzen is the morphological regions, which divides certain area into parts with different morphogenetic characteristics, each morphological region has a unity of form that distinguishes it from other areas. The morphological regions map can be drawn based on plan type areas map, building type areas map and the land utilization map. Conzen's work on the town of Lodlow was the first application of this regional morphogenetic approach. Conzen has divided the town plan of Lodlow into five parts, defined by boundaries with five-tier hierarchy. (Whitehand, 2001)

Conzen's contribution to urban morphology wasn't only limited to the previously mentioned works he has also has contributed to the field of landscape and the management and alteration process of urban landscape. He has also influenced Whitehand, who in his turn had massive influence on the field of urban morphology and urban landscape. Whitehand has established Birmingham's research center. It is focused on studying the medieval cities. He also has developed dynamic methods for analyzing urban form. (Moudon, 1997)

2.5.2 Italian School

Italian school of thought which originated in the national institute of Assicurazioni was founded in the 1940s by Italian architects and thus is mainly focused on the architectural aspect of towns and cities, and has concerned chiefly with the topological process of urban morphology. Saverio Muratori (1910-1973) was an Italian architect who taught in Venice and Rome and has initiated work on urban morphology in the 1950s by analyzing buildings form and location and connected it to the city's active history, constructing the theory of cities being an extent of its inhabitants' cultural development. The majority of work in the Italian school was concerned with building form, type, and pattern as it was considered the foundation of the urban fabric. (Moudon, 1998)

This focus on the building pattern without giving concern to the overall historic development of the urban fabric was the most significant weak point of the school as perceived by critics. However, Gianfranco Caniggia (1933-1987), who followed the work of Muratori and continued his tradition, has conducted work that correlated the development of urban fabric with historic background, as he distinguished artificial elements and time with spatial correlation. Caniggia put his actions into practice as he remained in buildings and architecture. (Levy, 1999) And he further developed the concepts of Muratori, by focusing on typo-morphology, which explains building type and city form. Caniggia developed an approach where he explains the Built form by tracking its historical development and formation. (Lovra, 2016)

2.5.3 French School

The French school emerged in the late 1960s in France and was established by architects Philippe Panerai and Jean Caste, with the Sociologist Charles De Paule as The Versaille

National School of Landscape Architecture as a part of the French Beaux-arts School. (Moudon, 1997) The French school of thought was influenced by Italian architects and there are many similarities between the two schools. Some scholars such as Darin, claim that there is no French school in Urban Morphology, not merely based on it being an extension of the Italian school of thought, but the basis and the framework of thought in the French school are thought to be scattered and fragmented. (Darin, 1998)

The reason for this lack of clarity in the French school of thought is that the French developed their theoretical framework by uniting different disciplines and fields into the study of urban morphology. While Italians focused on architecture as the basis for their approach towards urban morphology. There are also other differences between the two schools in their analytical approach to urban form. The French school for example doesn't present town plans in different time phases of "before" and "after", but rather it presents the patterns, forms, and types in correlation with each other. (Sadeghi and Li, 2019)

The French school of thought's main concentration was on searching the modern planning theories on the physical ground plans of European cities, for example, they have researched the effect of the Garden city movement on the plan of London City in the UK. Other theories such as Le Corbusier's radial city, and Haussmann's urban planning policy on shaping Paris. (Panerai, 2004)

The established Versailles National School of Landscape Architecture also had multiple interests, they aimed to not only present a frame of thought for the French school of urban morphology but also to contribute to city development. The most significant characteristics of the French school are having a strong connection with sociology, narrating design theory and a practical principle, and analyzing the connection between people and their surrounding environment. (Panerai, 2004)

2.5.4 Differences and common methodologies of the three schools

The three schools, British, Italian, and French, also referred to respectively as Conzanian, Muratorian and Versailles, have all carried out morphological analysis for purpose of theory building, there are several distinct intentions and purposes between them, which will develop several different urban morphology theories. The British school which primarily consists of geographers studies the urban form aiming for a descriptive and explanatory purpose, developing theories for city building, that are mainly concerned with why cities are built and how. While the Italian school's primary focus is to study urban form for perspective purposes, which aims to develop a theory for city design. The Italian school has directed this theory to rest on the historical traditions of city building. (Moudon, 1997)

The French school had researchers interested in both of the pre-mentioned purposes, as the social scientists of the French school also have an interest in building theory, and other researchers had an interest in city design theories. But the main purpose of French school was to study urban form to assess the past design theories' impact on city building. The French school mastered the use of morphological analysis based on the distinction between design as *theory* and design as an *idea*. This kind of analysis assesses the difference and similarities between what is built on the ground and what was stated as directives of which should have been built. (Moudon, 1997)

2.6 Factors of Urban Form Transformation

Urban form is mostly influenced by sociological, anthropological factors and technological ones. Social relations aren't just expressed and communicated through our daily lives, but they are found and embodied in buildings' spatial organization, and

settlement patterns. Built space is an expressive form of culture and lifestyle and the alterations that the social structure experience through time. (Calvet, 1979) There are many factors to be considered, environmental, cultural, economic, technological, or aesthetical. And it's of most important to understand each context exact situation to identify its influences. The result of those different circumstances is an architecture that reflects either a solution or a cause to those factors. To understand it we must consider all the possible factors that could affect the form we study. (Schatz, 1991)

Many considerations must be considered through studying dynamic urban forms through history. For example, if we focused on the development of three-dimensional forms of Buildings which can be considered as live entities that respond to changes and grow with their environment, we must include the surrounding causes as Buildings don't grow organically like plants or animals, rather they are affected by human interaction. A building through the long period of its life may experience several changes in the form of renovations, modernizations, or adding extensions. As the building responds to changes in function, or structure, or in some cases the need for new space. It is important to consider the lengthy process of erecting a building, and that through this time many situations could occur and change the outcome. Also, buildings can be subjected to many changes after the finished phase, and so the architecture is a time accumulative process. (Reilly, 2015)

Qaffin Town, being the subject case of this thesis has a violent political history of continuous wars that has reshaped the geographical boundaries of the town. It also has changed the town's economic and social dynamics considerably. In consequence, those factors will be discussed in the specific frame of the case study Qaffin.

2.6.1 Political conflict

Political conflict can affect cities' urban space and architecture in many ways. War and violence, which are the natural consequence of political conflict cause destruction, separation, confiscation, imposition of design and planning and render many areas inaccessible or activities forbidden. Political conflict reveals its physical form through actions such as building destruction, erecting walls and wire fences, which could ultimately change the natural urban growth of communities and architectural practices in such urban environments and thus shape a new identity to a city or a village. (Linehan and Boyd, 2013)

The impact of such political issues can affect the way people understand, produce, and inhabit their urban space. The inhabitants have to account for the new power in control and behave accordingly. And in cases of spatial change and land confiscation, they have to account for a new system of control and what it imposed by confiscating land, creating security zones, forbidden areas, and new territorial borderlines. And through this changing society is bound to change many of its social practices, and social activities through coping with the new strategies or reinvention of the community's traditions. Those sudden changes that disrupt the community can only cause radical changes in the urban environment and space. (Hirst, 2005)

2.6.1.1 Architecture in conflict

Conflict is better presented as a transformative process by which visions and ideas are interrupted and opposed which will cause social problems. The degree to which this disruption could affect society and spatial order depends upon the magnitude of the

conflict. People usually vary in their reaction to such disruptions, and how they recover from the collective impact. (Piquard and Swenarton, 2011)

In armed conflicts, there is usually an intention of rewriting history through using design and architectural narrative. Architecture responds by developing war-related buildings such as barracks, and checkpoints. The victors tend to impose their building technique and style by trying to subdue the architectural style and construction techniques of the defeated and promote new architectural forms. It could go to the extent of destructing indigenous architecture, and promoting the architecture of the new regime. (Joas, 2003)

In many cases destruction and division of place lead to political and physical colonization of not only land but also architecture. In regions where the colonized nation is bound behind separation walls, the rest of the land is left free for the colonizing factor to occupy and plan to suit the new ideology. New settlements are erected, declaring imposition and superiority. Those new settlements can cause complex reactions to the indigenous people of the land. They would either reject or resent this imposed physical structure in their historical land. Or might be prevailed by the superiority of this new structure and by time to imitate it. (Piquard and Swenarton, 2011)

2.6.1.2 Imposing power tools

Throughout history, ruling regimes have used architecture to express their power. Buildings and public spaces have expressed the identity and cultural values of the ruling regime that seeks to ensure its stay in the region for the future. And so, when power shifts occur, it's only natural to see the new power trying to re-identify space through a new language architecture and policymaking, that can embody the new world order and the government's ideology. (Linehan and Boyd, 2013)

Architecture is used as a means to demonstrate power by using space as a strategy that extends to promote a specific culture. Whether it's a metropolitan city or a small village, scale matters little. The main objective is to create a territory that reflects the new political context. Territorialism is one of the means that has been used to ensure the mark of a new rule. (Piquard and Swenarton, 2011)

Territorialism is one of the human characteristics which are established by groups and individuals to identify areas as their own. Architecture can play the position of authority by manipulating public spaces and applying ornamentation. Territorialism is also manifested through the process of diffusing styles to suit the political system in charge. In some cases, invaded territories are infused with the invaders' architectural style to mark dominance, while in other cases original architecture of the dominant culture is kept as a long run strategy to preserve power. This can go on to the point where public spaces are renamed and redesigned, or in the case of individual buildings where they are assigned a new function or position that suits the new power in charge. (Piquard and Swenarton, 2011)

2.6.1.3 Borderland architecture

In areas that lay in the borderline between two states or two regions, there is always a sense of transitioning that identifies such areas. When political struggle is added to those borderlands the conditions of those areas become much more complex. The term “restless architecture” or “architecture of anxiety” has been used by scholars to describe the architecture of such areas. (Shoonderbeek and Shoshan, 2016)

In borderland towns, the horizon doesn't present distance and the possibility it presents an edge and a boundary, a line that is meant to isolate and surround the inhabitants of

such towns. (Weizman, 2002) urban features of those areas have an insecure or confused identity of the place and thus an insecure architectural identity. Another factor that characterizes such areas is the constant fear of death to architecture, by the possibility of being erased or destructed. And so, this architecture tries to adapt to such circumstances, by being flexible and aware of the changing surrounding circumstances. Yet the final shape of those urban spaces is affected not only by the conflict but also the inhabitant's attitude of those areas and how they would appropriate the conflict into their architectural practice. (Shoonderbeek and Shoshan, 2016)

2.6.2 Economic

The economic condition of a community is a wide term that includes several factors such as, the economic state of a society, the existing and futuristic needs of a population, the population's social and demographic structure, and the living conditions and social infrastructure of the community. In regions that do not strictly follow codified regulations, we can see that architecture is mostly influenced by the broader political and economic influence. As the changing economic behavior of a population is considered a determining factor in a society's development of spiritual and materialistic form. Houses' diverse types currently reflect the architectural design that the economic ability can afford. (Abyzov, 2017)

All cities and towns undergo a significant change of economic structure, which could be slow or sudden. The rate of such change depends on the society's level or degree of economic development or can be the cause of an unexpected occurring. Thus, the urbanization process and the dynamics of social and demographic change are all connected to the economic conditions of regional development. This can be detected by

linking the gradual improvement of the population's financial ability and the upgrading of the living conditions, leisure, and services. (Piatkowska, 2012)

Tracing the economic pattern through a community can also help understand how economics control and affect architecture. The location of a certain economic activity can affect the spatial configuration of a built environment. This can be seen through the change in the physical pattern of building space, which includes both streets pattern and buildings arrangements. The relationship between the built environment and the economic pattern is a systematic relationship, which goes on to affect the local architectural style of the region, in terms of shape and design. (Narvaez, 2015)

This suggested relationship that connects occupational activities and urban form can help improve theories of urban design. This could be achieved through using space syntax and some statistical data of the economic activity in the studied environment. By analyzing architectural adaptability to the economic changes in domestic, public, and mixed-use buildings, it is then possible to explain the changes that occur to the physical form of buildings. (Narvaez, 2015)

2.6.2.1 Economic growth and urban expansion

Cities are social phenomena that grow as a natural outcome of a dynamic relationship between economy, architecture, and space. The reasons behind economic growth can be related to individual decisions; those decisions can be socially or economically based as urbanization affect individuals' behavior and decisions. This goes on to affect built environment form and scale. So, to understand urban planning through a city we need to define the specific relationship in which urban economics, spatial configuration, and social life are working with each other. (Hillier, 1996)

To understand this relationship, it's important to view cities as a process and a series of actions and changes that occur through a timeline, rather than viewing it as a still object. This method is especially clearer in urban areas that lack a defined urban planning and design scheme, which is based and constructed on its community needs and vision and has a more spontaneous order that depends on a social and spatial process. (Wendt, 2019)

2.6.2.2 Economic activity

Urban settlements are affected by the economic activities of their dwellers which affect their design and built form. As the architectural language that is used is a result of society's place and image. It is the physical expression of the local's history, heritage, and future vision. And as this community develops and grows their physical boundaries and economic ability. It's only natural that the urban form will adapt to the new territorial characteristics and economic development which will affect the spatial development dynamics. (Kalan, 2014)

2.6.3 Social

The social factor is one amongst many influences that affect the urban form, especially in vernacular environments. Social values and norms such as religious beliefs, family structure, male-female relationships, social ranks, the importance of family privacy, hospitality, and many others can shape the form and structure of urban areas. People design their houses in a way that reflects their culture, and so houses are the purest reflection of society's rules, norms, and social relations. According to many scholars, houses are also full of symbolic meaning. (Jones, 2008)

The social values that control society are varied and can differ in power and nature based on the community's development. For example, while studying a rural community the

social values that are to be investigated mostly relate to the family's structure as families are the fundamental units of such communities. Religious beliefs, customs, rituals, and communal relationships will be held under closer inspection. (Erdogan, 2018)

Social factor contains a spatial aspect that influences both architecture and urban space. Spatial relationships and details can symbolize social groups and manifest power. As the relationship between the constructed surroundings and its given society has a very important outcome on the architectural image. Humans create architecture for purely utilitarian purposes at times, and at others to perform specific social functions, because architecture has the power of communication, and thus it can create social bonds, relationships, and ritual forms which are the necessary elements of any society. (McIntyre, 2006)

Good architecture and thoughtful design both provoke a positive attitude. It inspires people to feel accomplished and good about themselves and their life. Good design also acts as a motivation for people to do more and achieve more for the community. While unplanned communities and badly designed architecture achieve the quite opposite of the previous. In conclusion, architecture can be used as a tool to inspire communities to do more or act less, merely by considering design. (McIntyre, 2006).

2.7 Chapter Conclusion

The previously reviewed analytical approaches of M.R.G Conzen and Whitehand have connected human activity to the physical form of cities. Through the fringe belts creation, the analysis of building cycles, and the Burgage cycle, the human engagement with this physical environment on an everyday basis has been considered one of the dynamics that affect urban form.

And thus, to understand the urban form, and its morphological process, it has to be seen through an observer position. It is most important to analyze the transformation of urban form through those who interact with it daily, and have contributed to its development. The decision-makers, users, and inhabitants of an urban area, are those with the clearest position for the morphological process of urban form. Thus, the historic background, personal experience, and individual perception should be analyzed within this thesis theoretical frame.

The French School analytical approach of town's urban morphology, unlike the Italian and British schools, doesn't use historical town plans to study towns urban form, rather they analyze the existing patterns, forms, and types and correlate them to each other to explain the urban form, they also focused on connecting human activity to build form, which contributes to building an understanding of the transformation process of the urban landscape.

Saverio Muratori has done extensive work on the Town's building fabric, as the focal point of the Italian school was based on the architectural aspect of cities, by analyzing the building fabric type and location and connecting it to the historic development of the town. Which means that the analytical approach of analyzing building fabric on a metrological scale is very similar to the Italian analytical approach. This approach is to be used in part of the analytical frame of this thesis, in specific in analyzing the Building fabric of Qaffin. Figure (2.11) shows the analytical frame meant to be used in the case study, the elements and sub-elements of urban form are chosen based on data available for analysis.

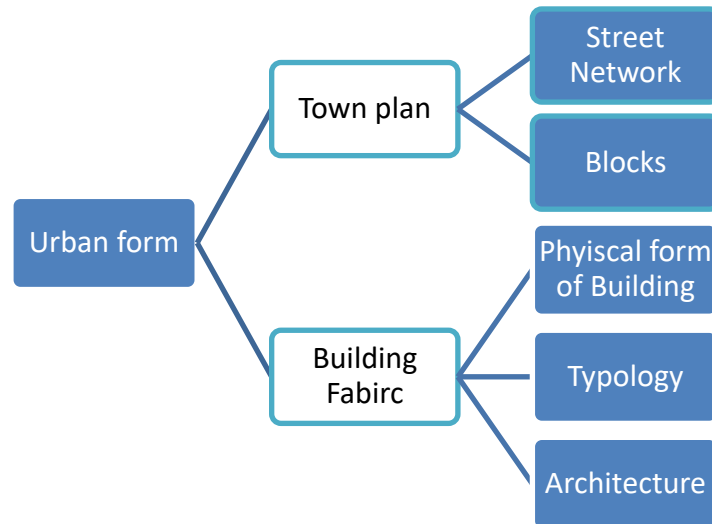


Figure 2. 11 Elements of urban form analyzed through the case study

Source: Author

Main aspects of human development, Political, Social and economic are discussed regarding their effect and relation with the urban form, although theoretically discussed and explained separately, on an experimental analysis those aspects will be considered with a correlation to each other. As the case study chosen is in area that suffers from constant political disruptions, the political factor is set to be the controlling factor that directs and disturbs the socio-economic development of Qaffin town. The descendance of the political events set the timeline for the change and development on socioeconomic life, and so this is set in the case study as the reference that this thesis metrological analysis is based upon.

An interesting framework was suggested by Kalan in 2014, to connect how the economic activity will eventually affect the urban form. It suggests tracking the appearance and disappearance of economic activities in a city through a timeline, by using available data and statistics. Then tracking the physical urban development through the city in those periods, and analyzing the urban form and building fabric used in this period. This will help us specify exactly how the changing economic activity could affect the physical form of urban settlements.

Chapter Three

Urban development of Qaffin

This chapter will review Qaffin town's urban development between 1948-2020, by discussing the spatial, political, socio-economic conditions of Qaffin and explain how political conflict has brought sudden disruption to the rural life of the town which has affected the overall urban development of Qaffin. This chapter will also examine if the town's location on the borderline of the political conflict has affected the socio-economic life in any form, and how that came to be materialized on the physical urban form of Qaffin, changing its urban fabric characteristics, building pattern, and the buildings three-dimensional appearance, see figure (3.1).



Figure 3. 1 Qaffin town in 2019

Source: Palestine Remembered

3.1 Qaffin town

Qaffin is a Palestinian town in the West Bank in Tulkarm Governate. Its location as a borderline town on the 1967 line has undoubtedly a huge impact on the political situation and the socio-economic circumstances of the town see figure (3.2). This positioning has caused the development of a very particular urban form, specially the building fabric, which can be best described as non-homogenous and disintegrated.

Like most towns in rural Palestine, Qaffin was an agricultural village and used to depend mostly on agriculture, mainly olive groves. However, the residents of the town gradually left the agricultural field in favor of working in the labor market, this trend has started in the late 1960s and it has picked up pace in the past two decades. The town's urban area has expanded through the years, what started with scattered little houses that spread around the dense old town in the center, and surrounded by fields of agricultural lands, have turned into a dense urban fabric with almost no vacant land left for development. (Harashe, 2011) Qaffin nowadays is considered a town in terms of population, social connections, community size, the scale of economy, homogeneity, architectural and buildings style, food, transport and mobility mode, and several other features. The urbanization trend is due to many reasons such as the high rate of population growth which have reached more than 11,300 people in 2021. (PCBS, 2021) And the forced urbanization practiced by the Israeli occupation that attempts to eliminate the agricultural life of Qaffin like many other Palestinian towns that had their agricultural land

confiscated, and their crops destroyed whether for settlements expansion or for the separation wall construction. (Municipality Engineer Interview, 2021)

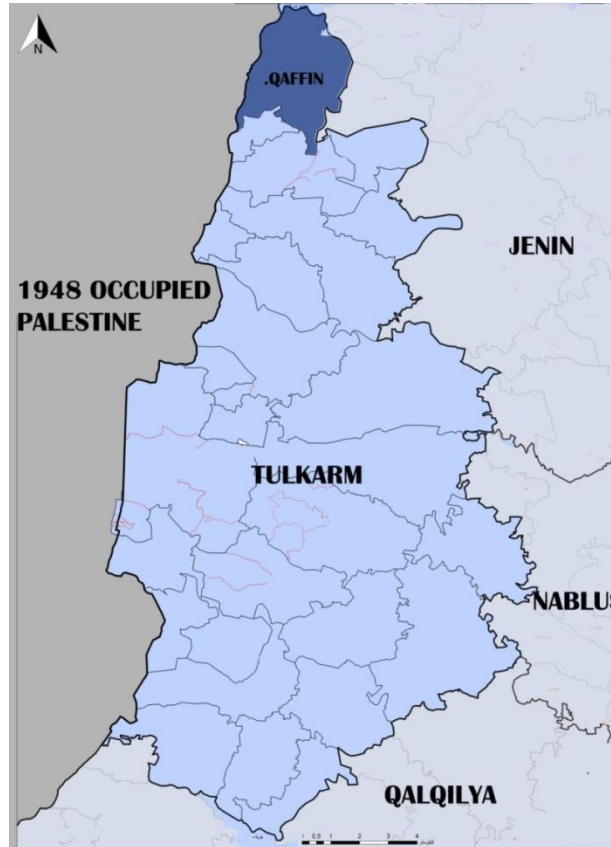


Figure 3. 2 Qaffin's location in Tulkarm Governorate

Source: Elections.ps, 2019. Edited by author

3.2 Population and demographics

The town's inhabitants are descendants of Bedouin tribes from Be'er Sheva, Arara, and Yalo villages in Hebron. (Al-Dabagh, 1973) The population has grown considerably during the last century, from about 800 people in 1922 to 1,085 persons in 1931. And naturally, it kept growing to reach 2,475 in 1961, and in 1997 it reached about 7,000 persons, wherein 2021 the population is estimated at 11,382 persons. Qaffin has a young community where more than half of the population is under 15 years old. Only 6% are over 60 years old. The town has more than 1600 families, where the average family has 6 individuals. (PCBS, 2017)

Table 1: Population Increase in Qaffin

Year	Population
1922	800
1931	1,085
1961	2,475
1997	7,000
2007	8,312
2016	9,838
2021	11,382

Source: PCPS, AL-Dabagh

3.3 Recent Historic development of Qaffin

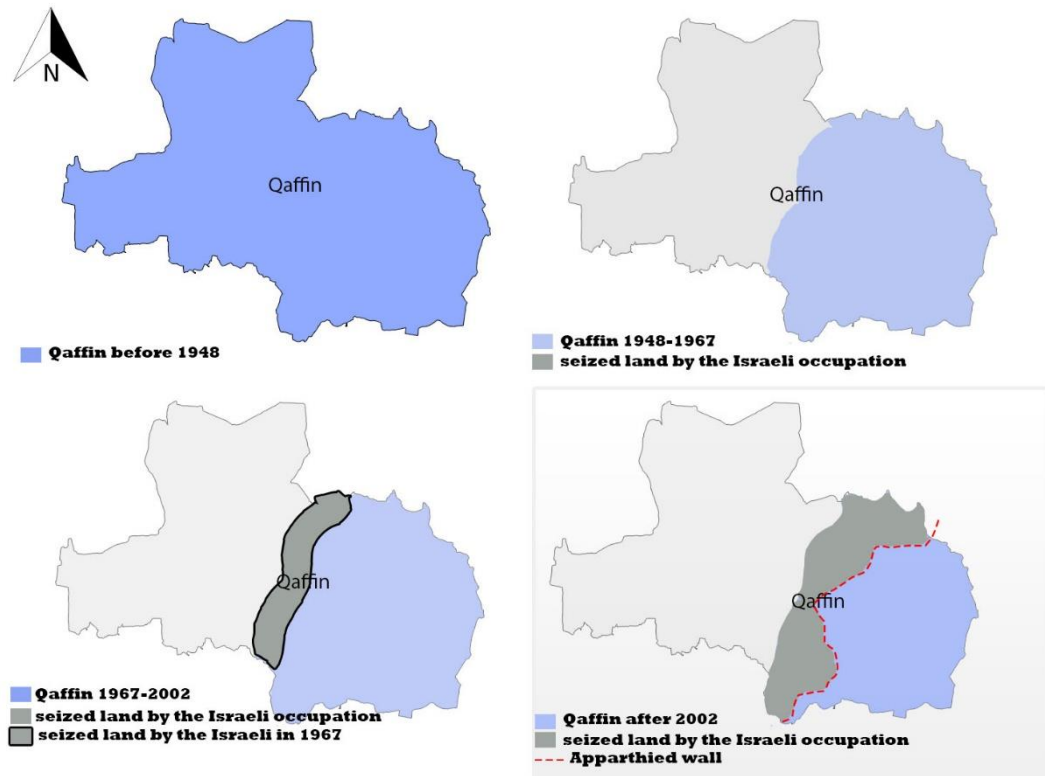
The town is connected to Tulkarm city, Yaabad in Jenin, and Baqa Al-Gharbayeh west of the borderline through main roads. Qaffin is surrounded by mountains and hills from all sides except the eastern side where the town is opened to the coastal plain, that connects it with towns and villages behind the 1967 line, and so this geopolitical allocation has made the town equally connected with the Palestinian territories and the occupied Palestinian towns west of the borderline. (Al-Dabagh, 1973)

The town is in the heart of the Palestinian political struggle which has caused major alterations in the town's geographical extent. The town's original area was of 23,755 donums in 1948, since then it kept decreasing through the years due to major political events that shaped the town's geography and situation, see figure (3.3). (Global Communities, 2013)

Table 2: Qaffin area declination

Year	Area	Cause of area declination
Pre 1948	23,000 Donum	-
1948-1967	13,000 donum	1948 War
1967-2003	10,000 donum	1967 War
2003-now	7,000 donum	Separation wall

Source: Qaffin.ps

**Figure 3. 3 Qaffin's area declination**

Source: Author

3.3.1 The British Mandate

Through this period Qaffin, classified as a village though this period, has its original administrative borders, see figure (3.4), people who lived in the city could work freely through their land, albeit with some concerns. The first is the regulatory British mandate law which strained Palestinian villagers with high taxes, dismissiveness of the agricultural sector and the local economy. Its constant quest of seizing land from the villagers to serve their Colonial agenda. (Abu Amer, 2013) Second, most of Qaffin lands at this point were

owned by the feudal lord Raoof Abdelhadi, who lived in a state on the southern borders of Qaffin, see figure (3.5), and most of Qaffin people worked under his command. (Waleed Sabbah Interview, 2021)

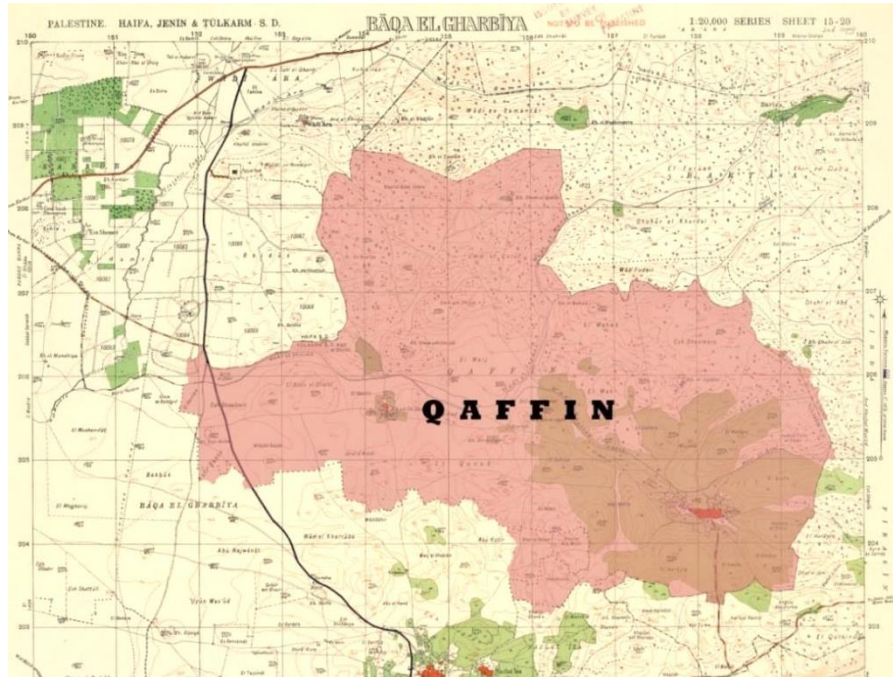


Figure 3. 4 Qaffin original Administrative 1945

Source: Palopenmaps (edited by author)

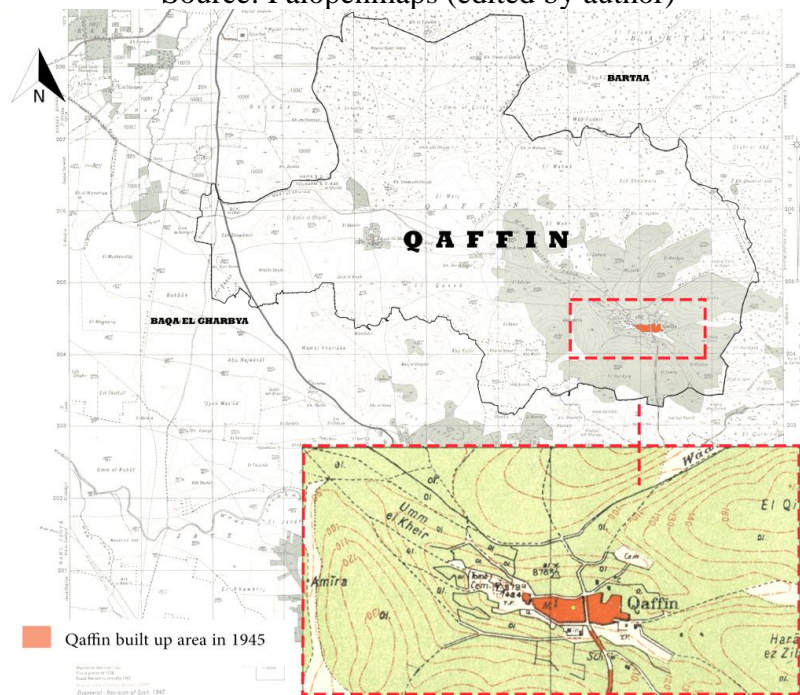


Figure 3. 5 Qaffin built up area in 1945

Source: Palopenmaps (edit by author)

3.3.2 The Jordanian Period

After 1948⁴ war Qaffin has lost More than 10,000 donums of the village area and was then separated by the armistice line to be considered as proposed Jewish land. Although at that time there weren't any physical barriers to mark the borderline, there was constant danger of being shot or injured if someone tried to cross the border into their land by armed Zionist forces who've been trying to guard the land they seized after the 1948 war. Qaffin then was part of what came to be known as The West Bank, which was put under the Jordanian role, see figure (3.6). (Al-Khalidi, 2011)

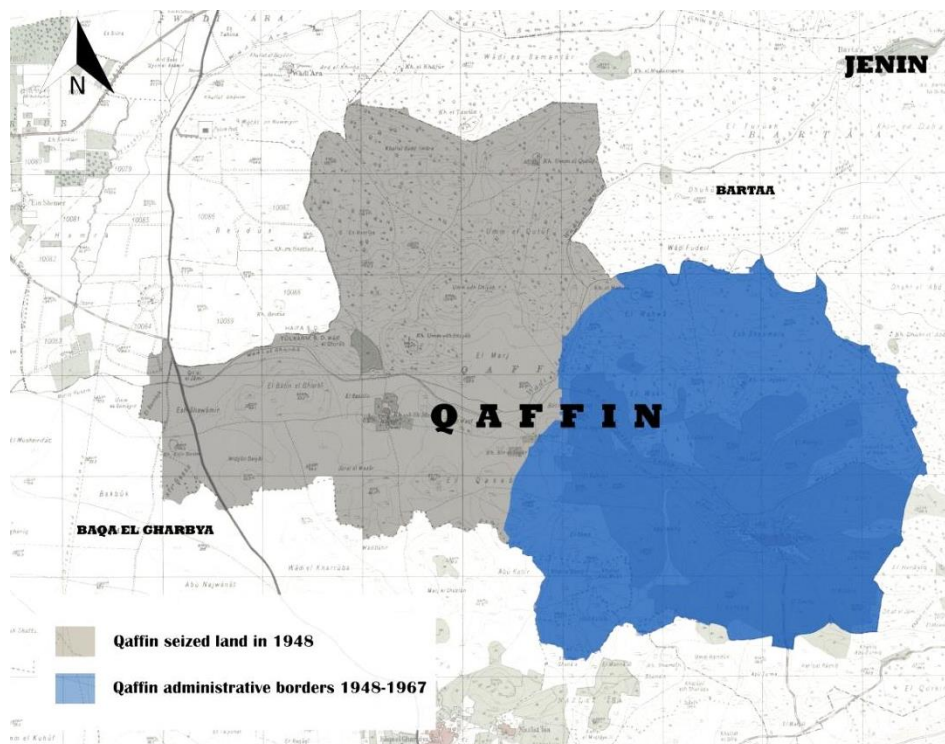


Figure 3. 6 Qaffin's occupied lands in 1948

Source: Author

⁴ The catastrophic attack the Zionist armed forces, on the Palestinian citizens which started in 1947, resulted in occupying more than 78% of Palestine to the later declared illegal state of Israel on Palestinian land. (Morris, 1990)

3.3.2.1 Urban planning

The urban development of Qaffin village was in the vicinity of what is now known as old town Qaffin, see figure (3.7). Urban expansion had a slow pace, as people were still affected by the 1948 war and the town's troubled economic conditions. (Mohammed Yassin Interview, 2021) Yet through this period buildings execution became more improved, with the possibility of adding extra architectural details as the construction process was supervised and executed by a master builder. The master builder work was more professionally performed than the previous peasant houses which were built by the owners with collective help from the town's people, which is referred to as "Al-Owneh". However, house owners and their relatives still helped and participated in the construction work, yet under the supervision of the master builder. An interesting report from the people of Qaffin stated that women also participated in the construction, specifically in the roofing process, carrying buckets of concrete to the top level of the house. Nowadays, Women in Qaffin, do not participate in public labor work and are only considered to be a domain for males only.

Change in spatial arrangements, as newer buildings were set with farther distances than their former in old town Qaffin, this new arrangement was affected by the building regulations and laws imposed by the planning committees of Jordanian planning law, as land parcels were required to have certain setbacks from all sides, and allowed a certain building percentage on the plot. This ensured a greater spacing between buildings that the old town lacked.

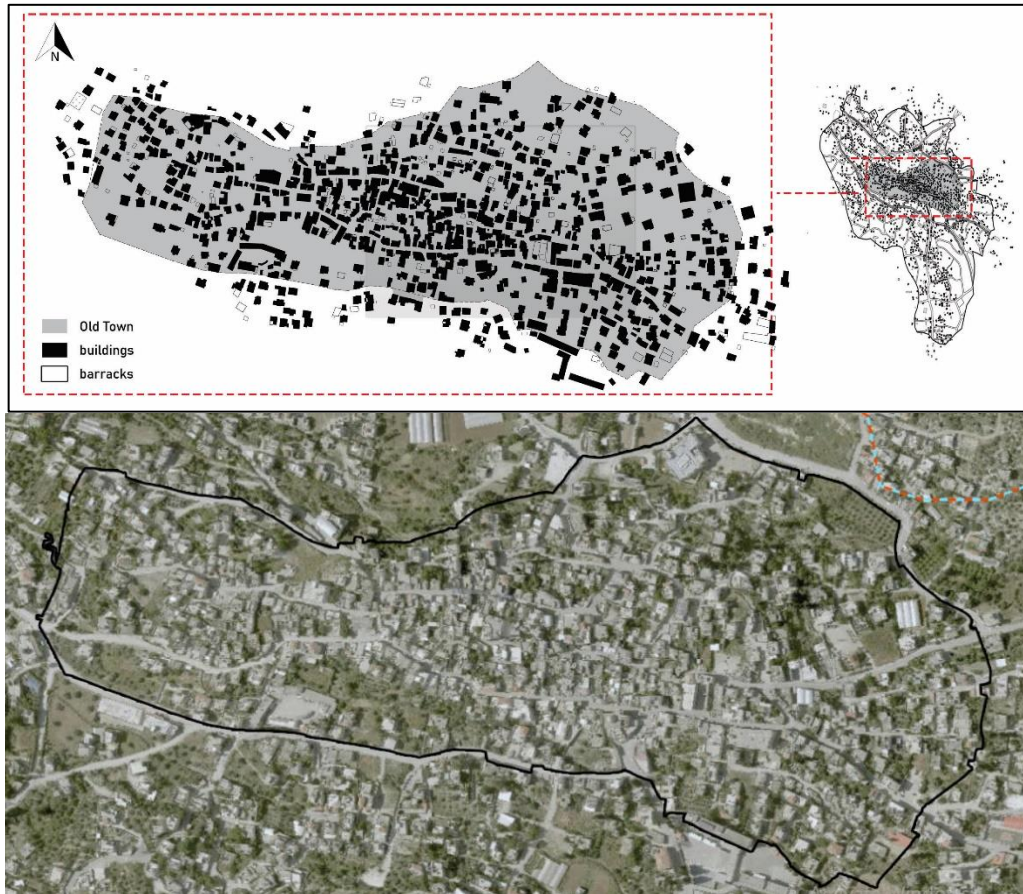


Figure 3. 7 Aerial photo of old town Qaffin in 2019

Source: Geomolg (Edited)

3.3.2.2 Economic Situation

Like many Palestinian villages, the olive tree wasn't merely a national symbol but constituted the economic base of those towns and villages. As 70% of olive groves were confiscated by the Israeli occupation, the economy of the town was extremely damaged, as a large number of farmers have lost their income and were forced to find an alternative. (CHF, 2013)

Through the Jordanian period a large number of the town residents have immigrated to work in Gulf countries, mainly Kuwait, this has provided them with new economic fortunes that have affected certain individuals within the town community. Also, the trend of working in construction in the occupied lands of Palestine has started through this

period. And with the previously mentioned loss of agricultural land and the newly available opportunities of working abroad or in occupied Palestine, started the change in Qaffin's economic market.

3.3.3 The Israeli Occupation

Qaffin, now under Israeli occupation⁵, had its farmland confiscated to the Israeli side and the town's original 23,000 donums were reduced to 10,000 donums, as the 1967 line ran through the town's agricultural lands denying most inhabitants from their right to reach their lands in the eastern side of the town, which were mostly fertile plains used for agricultural purposes like growing seasonal crops, planting olive trees or as grazing lands for herds. (Al-Dabagh, 1975)

3.3.3.1 Urban planning

The decision of detaching people of Qaffin from their land, and obtaining them within a small urban region can be seen through the Israeli planning committee Master plan for Qaffin town which was drawn in 1991. Those Master plans are part of a series of planning for Palestinian villages referred to as Shamshoni plans after the architect S. Shamshoni, who worked for the Israeli occupation designing Master plans that could suit the occupation practices of detaining Palestinian towns and villages. (Mahrok, 1995)

The master plan in figure (3.8) was designed by the Israeli occupation planning committee. The design principles of the master plan are in parallel to those of Shamshoni and serve the same purposes of limiting Qaffin's urban expansion within an area of 1,108

⁵ The attack Israel launched on Egypt in 1967, caused a war between Israel, Egypt, Syria, and Jordan. The defeat of the Arabic mutual defense forces, caused the retreat of Jordanian and Egyptian governance in the West Bank and Gaza, which resulted in Israel seizing The West Bank, The Gaza Strip, and East Jerusalem, as they came to be included in the self-defined Jewish state. (Thawaba, 2011)

dunums, which is only double its urban area back then, while the rest of Qaffin's land remains under Israeli control. The Israeli occupation considered this area of 1,108 dunums as an urban canton for Qaffin population to grow in, while the rest of the town lands would be considered owned by the Israeli occupation. (Municipality Engineer Interview, 2021) Qaffin's agricultural lands, like most of the towns surrounding it, were classified as Meeri⁶ land during the Ottoman Empire, and later the Israeli occupation claimed de facto control and ownership of those land⁷. By this, the agricultural lands of Qaffin cannot be used in the town urban development, rather they are considered state ownership of the Israeli occupation and serves for Israeli development. (Odeh, 2007)

⁶ Meeri is cultivated or cultivable land vested in the hand of the state, acquired to the state through conquest or through the forfeiture of ownership due to heirs failure. In Palestine. Meeri includes the largest portion of landed property (Solomonovich and Kark, 2015).

⁷ It's not known the percentage of Meeri land to Tabo land, as the Tabo record was confiscated by the Israeli occupation and is kept from the Palestinians. (Odeh, 2007)

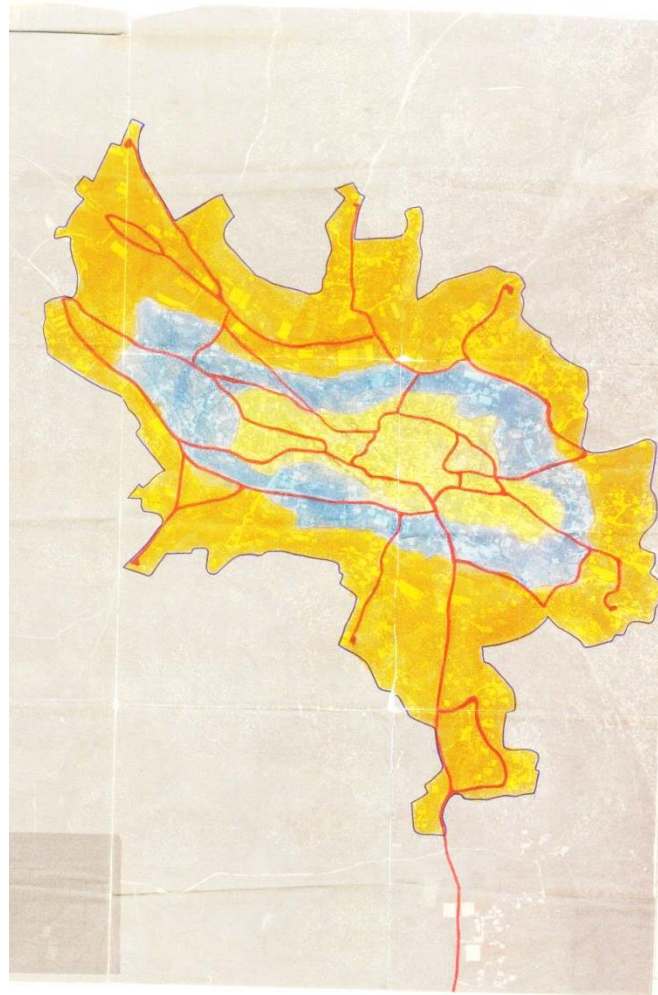


Figure 3. 8 Qaffin Master Plan 1991

Source: Qaffin municipality

3.3.3.2 Economic situation

The Israeli occupation after confiscating the town's agricultural land in 1967, allowed the Palestinians living in the West Bank to enter the 1948 occupied lands. Opportunities to work in labor were allowed for the Palestinians, and the Farmers of Qaffin who were left without lands and income had no choice but to turn into this labor market. As it came to be, the wages provided for the labor force were tempting enough for other farmers, who still had their lands to leave agriculture altogether and work in labor. (Amiry, 1989)

In contrast, the income of farming and other agriculture-related activities kept decreasing. Especially as most of the farmers were small-scale producers, because of the scarcity of

land, the shortage in water supply, and the lack of means. They were left unable to expand and intensify their production. This meant that more numbers of farmers will be engaged in non-farming professions that were in most cases located outside of the town. (CHF, 2013)

During the 1970s and the 1980s, the Israeli occupation was busy building new cities and settlements, labor forces were needed to work as builders to construct those settlements. Thus, the construction field took the largest section of Palestinian workers. Most of Qaffin's working force turned to work as builders in cities and towns located west of the 1967 line. And so on, Qaffin became famous for its Master Builders, who came to be professionals with this new skill and started to work in Qaffin, in neighboring towns, and even in the Palestinian towns in the occupied 1948 Palestine, that are near Qaffin. (Waleed Sabbah Interview, 2021)

3.3.4 The Palestinian Authority

Qaffin, like most Palestinian towns and villages was classified into Areas B and C⁸. Where only 2,000 dunums of the town are in Area B, which is the town center and its surroundings. The rest of the town area is classified as C, houses and any other building which lay in the outskirts of the town are in Area C, and thus they are not included in the town's master plan and do not follow any building regulations, and are mostly built without permits this is why they face a demolition threat from the Israeli occupation. Also, all the agricultural land which surrounds Qaffin from all sides is included into Area C, and is therefore under Israeli military and civil control, which can confiscate it anytime

⁸ The Oslo negotiations divided The West Bank into three non-contiguous territories, classified as A,B and C. In Areas A and B, the Palestinian authority is in charge of administrative responsibility that includes, education, health and planning. While area C, that makes 60% of the West Bank and covers most of the West Bank's agricultural lands, hilltops, water resources and archeological sites, gives Israel total administrative and security control of the area. (Weiner, 1999)

they see fit under security pretenses. During this period Qaffin established a municipality council in 1997, and as of then was considered a town.

3.3.4.1 The separation wall

The Israeli occupation initiated building a separation concrete wall that separated Palestinian communities in 2002. (Sorauf, 2015) The separation wall which mostly runs through borderline areas of the West Bank, has created large separation zones and appropriated large additional areas of Palestinian land in the pretext of security reasons. As Qaffin town is located on the 1967 borderline, the separation wall has run through it. Qaffin yet again has suffered greatly due to the construction of the separation wall on their lands, as more than 3,000 donums were confiscated, significant agricultural lands were grazed for security reasons and olive trees were uprooted, and so the town was left with only 7,000 donums total, of which 5,000 for agricultural purposes, and 2,000 donums of built area. See figure (3.9) the separation wall surrounding Qaffin is not made of concrete like other parts in The West Bank, the separation wall is more of a wire than a wall and is made of electric mesh wire. (CHF, 2013)



Figure 3. 9 The Apartheid wall in Qaffin

Source: Author

The separation wall access point is referred to as “The gate”. This access point allows access to Palestinians _Who are given permits of passage_ to pass into the 1948 occupied lands. The gate site has been actively turned into a dumping site by the Israeli military. Piles of garbage, manure, and even decomposing dead animals are found at the site to make it as unpleasant as possible. The gate of Qaffin was the only access through this wall which could allow farmers into their seized land behind the wall, as only farmers who own olive groves are occasionally and infrequently given special permits to access this gate, which is classified as an agricultural gate, this would allow them to tend to their land and cultivate it. In some cases, farmers were allowed to enter with their farming tools, tractors, and animal wagons. Through the last couple of years, the separation wall, has been penetrated in multiple locations, and the Palestinians could pass through those “openings” to the 1948 occupied lands, however, these passages are dangerous, and one is at risk of being shot or attacked by Israeli soldiers if caught in the act. (Site survey, 2021)

Despite the risk, those openings through the wire have become so popular, that upon visiting the gate while conducting field research, it has been found empty and deserted, not even the Israeli military were at the gate like it’s the case for any Palestinian\Israeli passage points, see figure (3.10). This recent change has allowed all people of different situations and age groups to enter the 1948 occupied lands, and then they could easily find work without permits. (Site survey and Local Interviews, 2021)



Figure 3. 10 The Gate in Qaffin deserted and opened wide, 2021

Source: Author

3.3.4.2 Urban planning

The Palestinian Ministry of Local Governments and the municipality of Qaffin both work within the borders of Area B only, as they have no juridical powers over Area C. and thus the Master plan of Qaffin includes only Area B and gives no regard for Area C, which means that the town planning is only focused on its urban area with no regard for its natural and agricultural resources. Therefore, the role of the Ministry of Local Governments regarding planning has not served to improve or change the situation of Area C, and has abandoned the control of Area C to the Israeli occupation as agreed upon on the Oslo Accords. (Mansour, 2017) Noting the following map in figure (3.11), Area B is almost the same area of the Master plan previously designed by the Occupation planning committee. The new Area B has the same area of the town's master plan, 1,859 dunum, see figure (3.12). The first Master plan of Qaffin designed through the Palestinian authority role was in 2001, and it can be seen in figure (3.12)

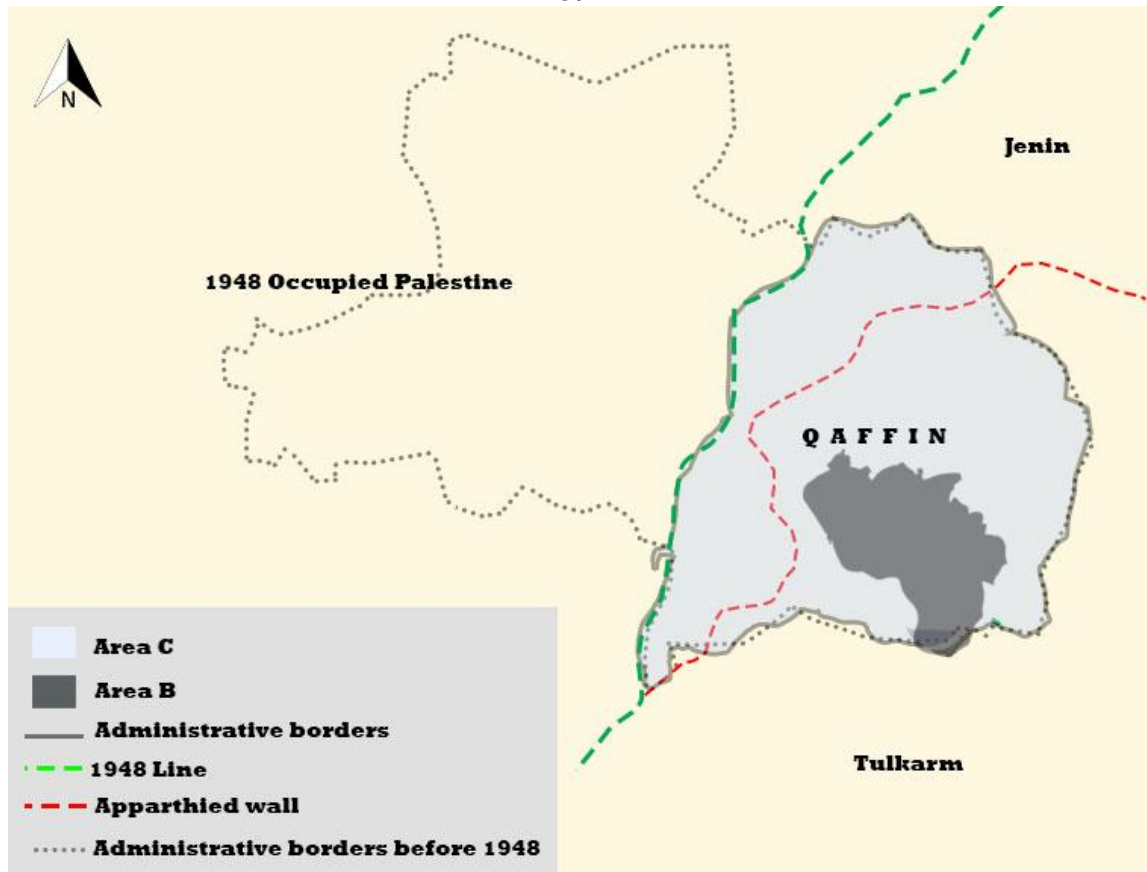


Figure 3. 11 Borders and Oslo land classifications of Qaffin

Source: Author

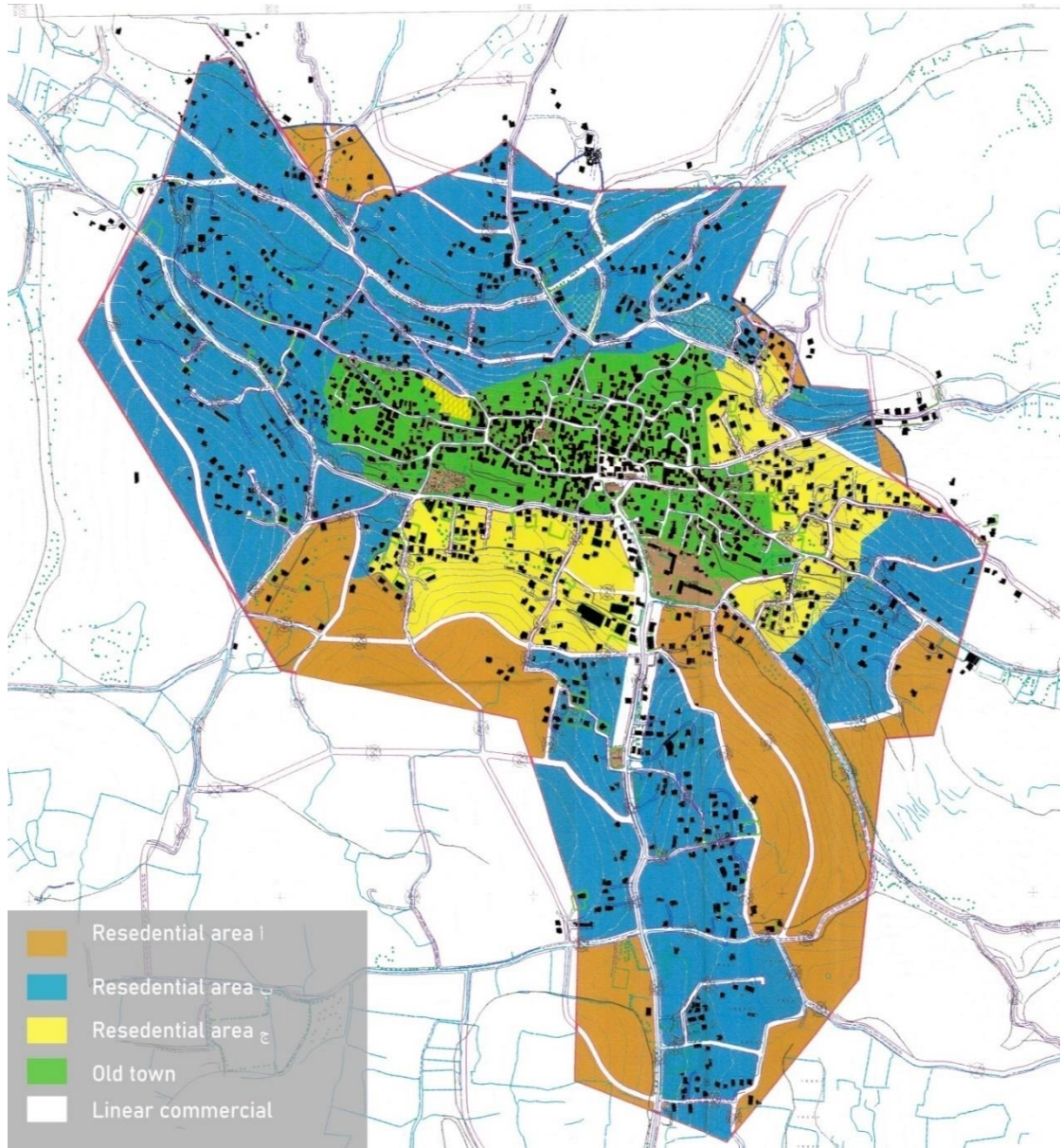


Figure 3. 12 Master Plan of Qaffin 2001

Source: Qaffin Municipality, edited by author

The construction of the separation wall in Qaffin in 2003, didn't cut lands of the Master plan area, as the separation wall was constructed in Area C. Area C isn't included in the Palestinian planning vision, even though they formally request full authority over Area C. The Master plan of 2017, shown in figure (4.13), had little change in the area, from 1859 donum to 1890 donum, adding only 40 dunums through a period of 16 years, to a population that has increased more than 40% of its original size.

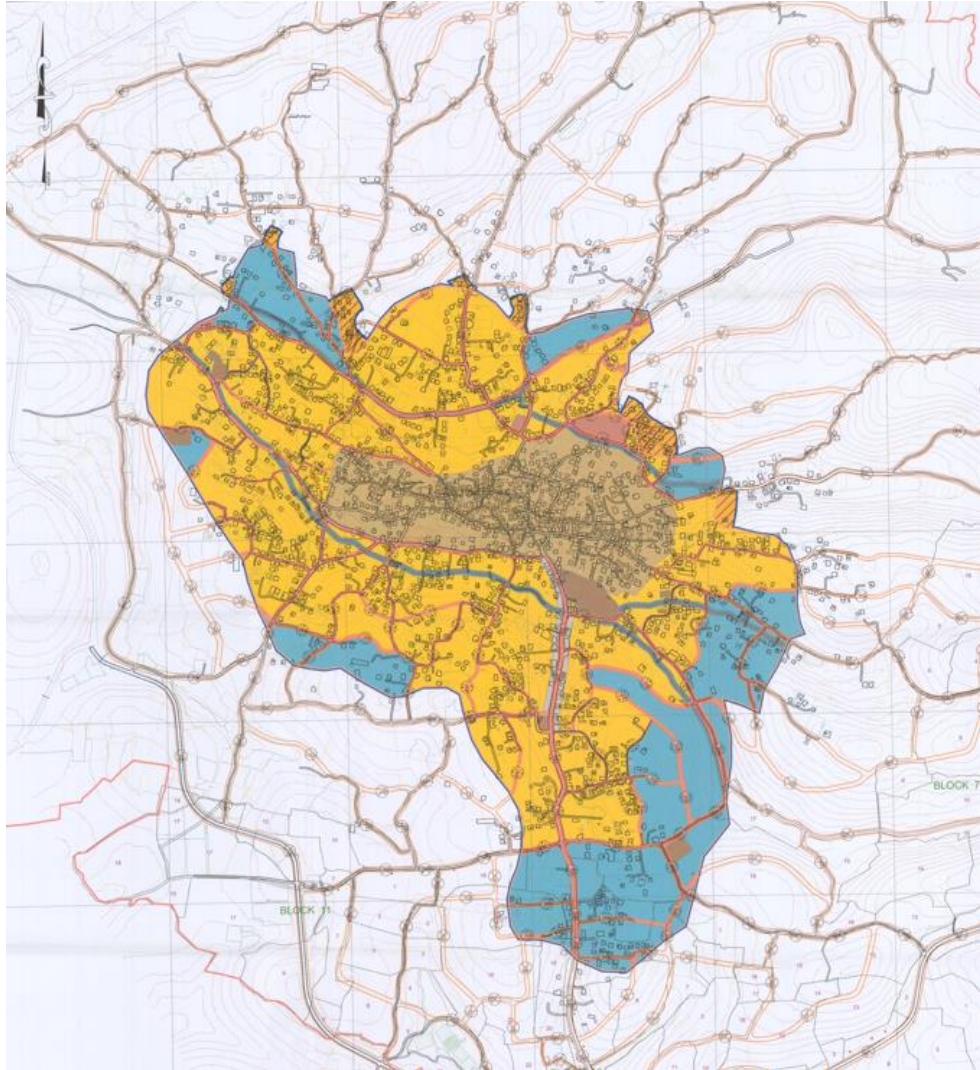


Figure 3. 13 Master plan of Qaffin 2017

Source: Qaffin Municipality

The Separation wall has annexed about 40% of Qaffin's total area, which doubled the town's density immediately. This is interpreted into a high rate of population growth, and a decline of land and area for future development, which will lead to urban congestion, sprawl on agricultural lands, see figure (3.14), and the deterioration of future town improvement, as urban underdevelopment is expected to be the character for the town unless a major improvement scheme was introduced immediately, see figure (3.15).

The large construction boom in the housing sector in Qaffin was and still is unmatched by a suitable planning scheme that can accommodate the speed of this urban growth, as a result, this has caused high pressure on the town's urban and civil services, as the housing

expansion took over most of the Master urban plan leaving almost nothing for public and recreational development such as, health and education institutes, sport and community centers, public parks and many other.



Figure 3. 14 Agricultural field in Qaffin

Source: Author

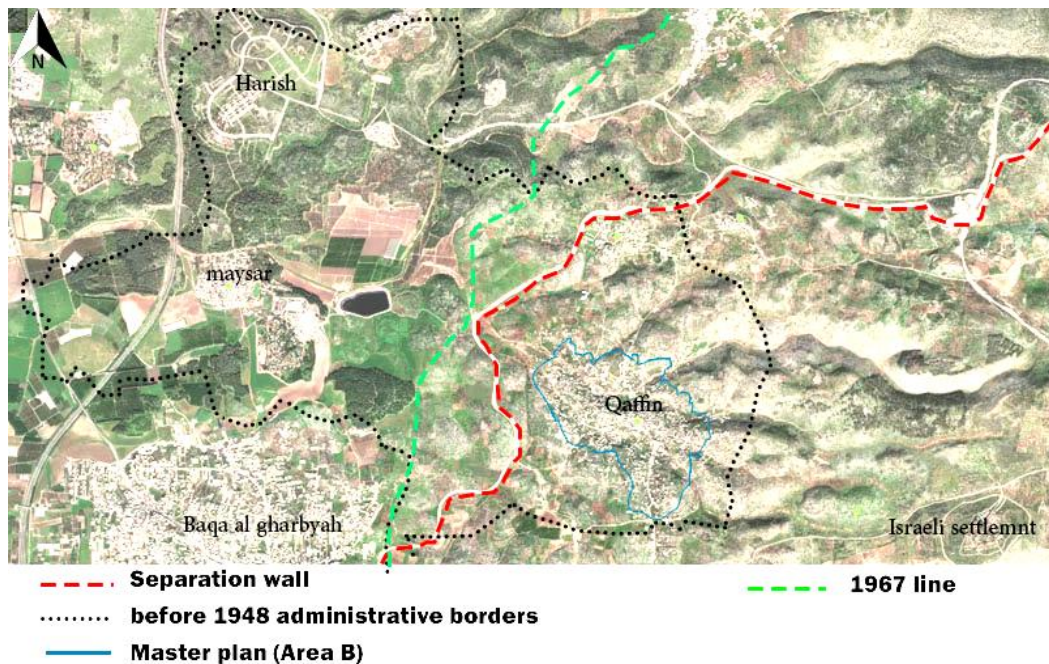


Figure 3. 15 Satellite map of Qaffin with political borderlines

Source: Author

The construction expansion has exceeded the capacity of Area B, and currently expanding in Area C, however, this expansion is limited by several obstructions that surround Qaffin.

The eastern side of Qaffin which is called Fraseen, is an archeological site that has been historically owned by the Ottoman Empire (Meeri land), this put the area in the Israeli occupation grasp, as people who live in this region has been handed a notice of demolition back in June 2020, see figure (3.17). And the occupation forces have destroyed several houses and agricultural greenhouses. The occupation has also initiated the construction of Israeli settlement Harmish in Fraseen, which the local authorities have countered by forming a local council for Fraseen and encouraging people to build on those land as a way of resistance against Illegal settlements expansion. But people are still discouraged and in fear of building in the eastern land of Qaffin, see figure (3.18). (Interview with Qaffin municipality head of planning department, 2021)



Figure 3. 16 Harmish an Israeli illegal settlement that is still in early construction phase, 2017

Source: Google Maps



Figure 3. 17 A child setting on the ruins of his house demolished by Israeli forces in Fraseen, 2020

Source: Oday Daibes

The Western side is also uninviting for urban expansion, with the separation wall running along with the western lands of Qaffin since the occupation considers houses or constructions built on those lands as a security threat. Thus, most expected urban expansion is expected to happen in the northern and southern direction.

Due to the pre-mentioned limitations of urban expansion which are shown in the map in figure (3.18), the urban expansion and due to lack of planning have been growing not only on agricultural land expense but also on archeological sites. As Qaffin is located on the ruins of historic towns such as Fraseen, Shamseen and Abulrujman, and instead of utilizing those locations for touristic reasons, they are left underdeveloped where the private sector has begun using those lands either for residential use, or industrial projects such as concrete factories or aluminum and steel workshops.

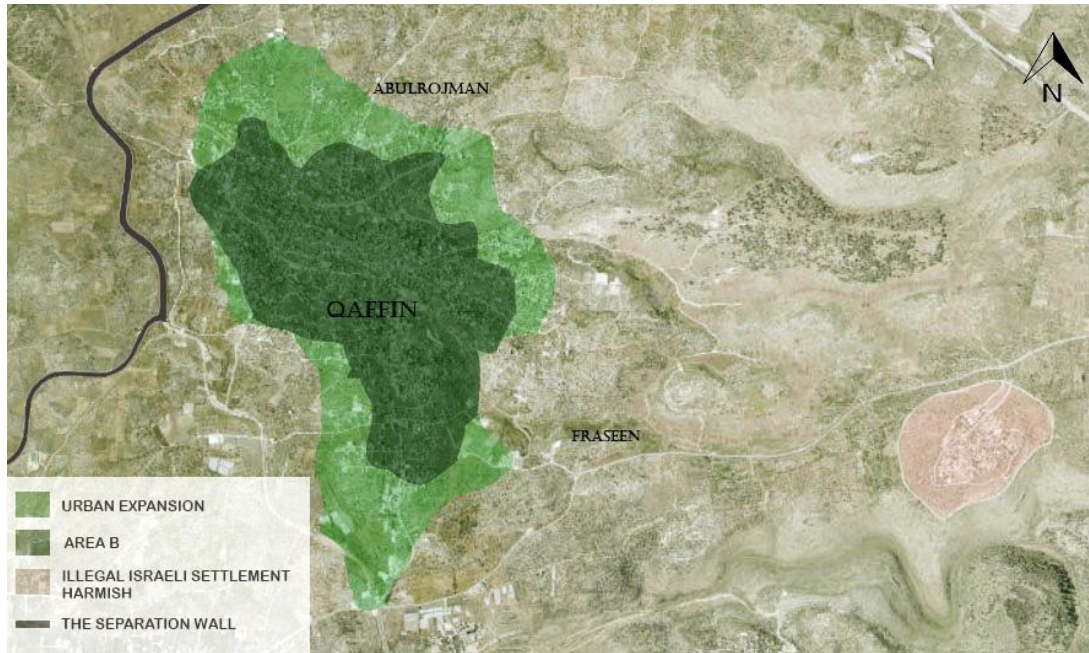


Figure 3. 18 Limits of urban expansion in Qaffin

Source: Author

3.3.4.3 Economic Situation

As the Palestinian Authority took control of some areas in The West Bank in 1994, the new Palestinian state failed to provide alternative economic opportunities for the laborers who worked in the occupied lands. (UNDP, 2016) besides a small number of governmental positions, the citizens of Qaffin kept working as builders in the occupied lands. The new government also did little to provide or support the damaged agricultural sector, by either funding local farmers, or providing a marketing strategy for their crops. In 2003 and after the construction of the separation wall, the town was left with even less land, as more than 3000 donums were seized by the Israeli occupation, and more than 600 acres were cleared of crops and confiscated for the construction of the wall. And so Qaffin's agricultural fields that were used to grow olives and raise cattle were lost and the agricultural sector of the town took another blow. And so, the agricultural contribution

to the economy of the town was marginalized, as Qaffin has now only 800 farmers. And thus, labor in the 1948 lands, became the main economic source in Qaffin. (CHF, 2013)

. The wall which dissected a large section of their lands, and was expected to cause additional hampering to the town's economy, had surprisingly an opposite effect. The segregation wall in Qaffin, while it cut off people from their land, and detached them from their main economic source, it opened for new work opportunities in the occupied lands. The new work opportunities, while they offer better wages, are fragile, unstable and mostly informal. Qaffin is surrounded by project Israeli cities that have been initiated recently in the late 1980s, like Harish City that is only 10 minutes away from Qaffin, see figure (3.19).



Figure 3. 19 Hareesh Israeli project city

Source: Google maps

Qaffin is also surrounded from the west and north directions by 1948 occupied Arabic towns such as Baqa Al-Gharbeya, Um AlFahem, Jatt, Arara, Arah, Barta'a, Al-Gharbeya and Maysar. The working force of Qaffin does construction works in those towns, and according to the construction workers that were interviewed, they prefer working under Arabs to working in Israeli cities, despite the fact that working in Israeli cities has a better financial reward. This is due to several reasons; working in Israeli cities is considered

unethical and against national morals, plus transportation to near Arabic towns is easier and takes less time than transportation to coastal cities.

Laborers of Qaffin, mostly work in building construction and a large section of them are Master builders and thus have high wages, this high income has improved the economic situation in the town, and is easily noticed in the rapid construction boom that happened in the past decade in the town. Nabeel Ammar, a construction man upon interviewing him claimed that after working for one year in construction in the occupied 1948 lands, he was financially capable of building his own house.

Nowadays there are about 3000 people economically active in Qaffin, most of them males since females only make 8% of the town's working force. 2000 person work in labor, which makes two-thirds of the town's workforce. The rest work as either farmers or in a small-town business as there are 300 operating establishments in the town, while there are 539 employed persons in the private sector, non-governmental organization sector, and governmental establishments in the town. As most of the town's working force is laborers, the number of people depending on retirement pension is very small and it only makes 2% of the town income. This leads to the conclusion that the town's economic status is very insecure as people depend only on monthly or even daily wages. (PCBS, 2017)

Table 3 Economic activity in Qaffin

Economic Activity	Number of workers
Agriculture	800
Private sector	300
Governmental and non-governmental	239
Laborers	1670
Total	3000

Source: PCPS 2017

3.4 Education

There are six schools in Qaffin that provide education for more than 2500 students. Most of the town people have acquired basic education, but less than half actually continue into secondary education. (Qaffin Municipality, 2021) in comparison with neighboring villages, Qaffin has lower numbers of students continuing their higher education for both females and males. There are however females enrolled in secondary schools and higher education more than there are male students. This is in part due to the town's unstable economic conditions, which put males under the pressure of entering the workforce and getting an income to support their families at a young age. While girls are not suitable for labor in Palestinian communities, they continue their higher education. When conducting an interview with the boy's secondary school headmaster, Mr. Mohammad AlKhaseeb, he complained of a high rate of students neglect for attendance in favor of working in labor behind the separation wall, see figure (3.20).

3.5 Social Life and Family Households

90% of the town's family households are nuclear families, with only 4% being extended families and the average family containing 6.2 persons. (PCPS 2021) The shift from extended family to nuclear family models in most houses in Qaffin has been a key role in

turning from the traditional way of living to the modern way, and it caused the changing of the typology of the house in town.

Despite the higher education rate of females in Qaffin in comparison with males, families depend on the husband or older sons to provide a living for the family as Females' access to work is still severely restricted, and most of them lead a domestic life. Social norms play a key role in keeping women outside of the working force, as employment is still male-related. And so, women are excluded from being housewives and caregivers. While this is a very common issue in Palestinian villages, Qaffin has a higher rate of early marriage for females, as noted before men start working for a living at a very young age, and thus are financially equipped to start a family, this put them in search for young brides. And in contrary to neighboring towns and villages, where the number of early marriages is dropping annually, in Qaffin early marriage numbers have a steady unwavering pace. (Saher Tomeh, 2021)



Figure 3. 20 Kids playing at the ruins site of an Ottoman Peasant house
Source: Abdulla Harashe

3.6 Chapter conclusion

Qaffin's area declination as a direct effect of the Israeli occupation and the political instability of Palestine has changed the town's geophysical and economic pattern. Qaffin was affected directly by every political conflict since 1948, and it can be clearly seen in the geographical declination of the town area, see figure (3.22) The area declination and political struggle, in the case of Qaffin are two interconnected dynamics that have shown the greatest effect on the urban development of Qaffin.

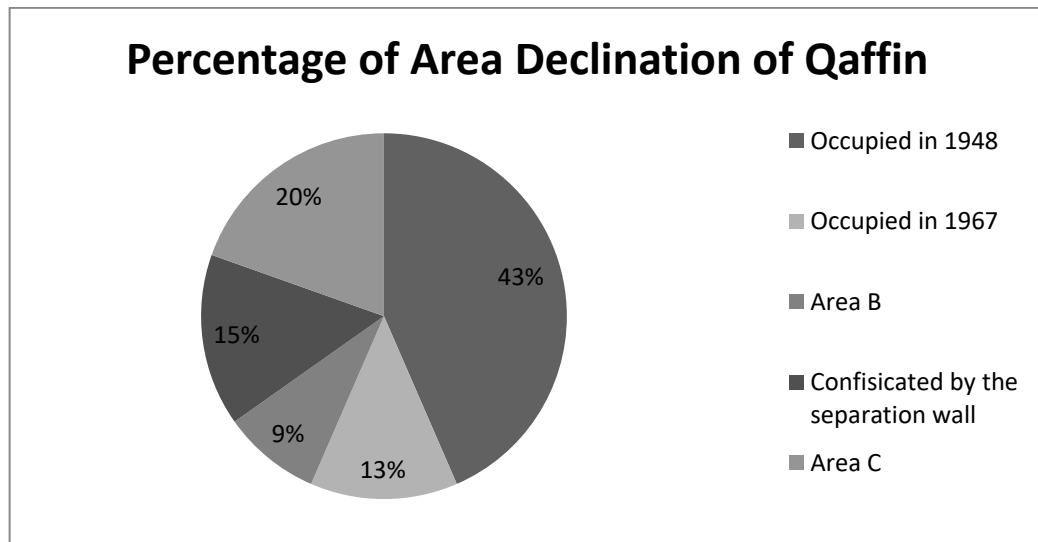


Figure 3. 21 Qaffin area Declination

Source: Author

Another discussed factor that has contributed to the change of urban development of Qaffin town is the population rate. The natural population increase of the town people is growing at a very high rate which has seen the town grow from 800 people in 1922 to 11,352 in 2021. The growth of population rate has been accompanied by the area declination of Qaffin, the relationship between them is shown in the figure (3.23) below.

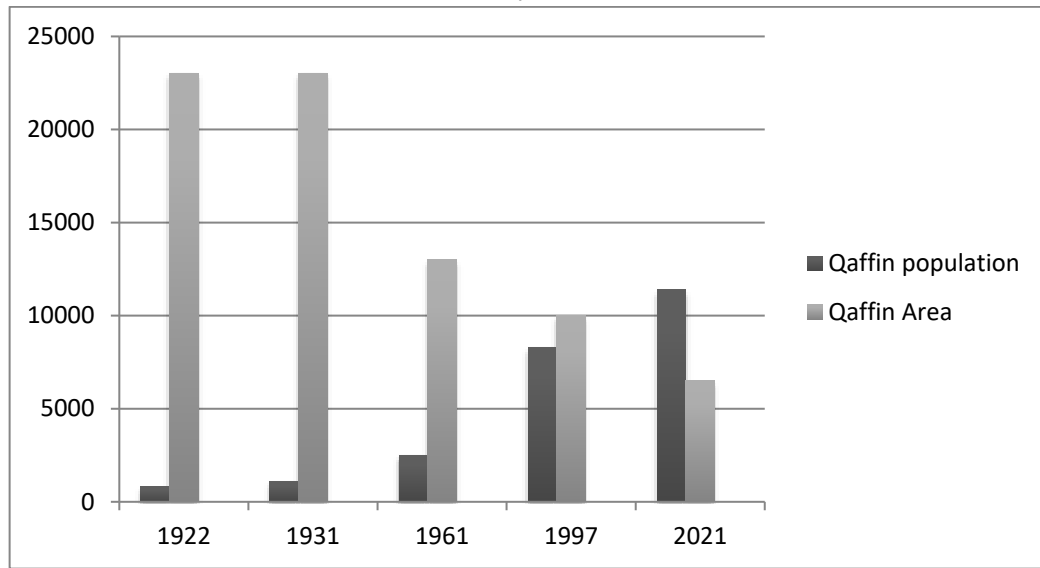


Figure 3. 22 Qaffin population to area ratio over the years

Source: Author

The declination of Qaffin area has deprived it of its agricultural lands, which caused diminishing of agricultural activity in town life, contrary to the thriving construction labor market that have withdrawn most of the town young men. The new occupational activities have brought more economic influx to the town, facilitating a construction boom in the 1990's, yet again affected by another political event, which is the coming of the Palestinian Authority which have granted people of the town with a sense of security.

Urban development of Qaffin has changed accordingly to the changed political and economic situation of Qaffin, along with other forces of change like the natural increase of population and the change of social life in Qaffin, which had shown more laxity in social norms, and change in family relations. The urban expansion and growth of Qaffin included the appearance of public buildings, commercial or industrial institutes and new housing models, such as the multistory apartment buildings, and the cottage house. The following graph in figure (3.24) shows the ratio between the town population, number of buildings and number of housing units through specific years of the last century. Which highlights the high jump in population.

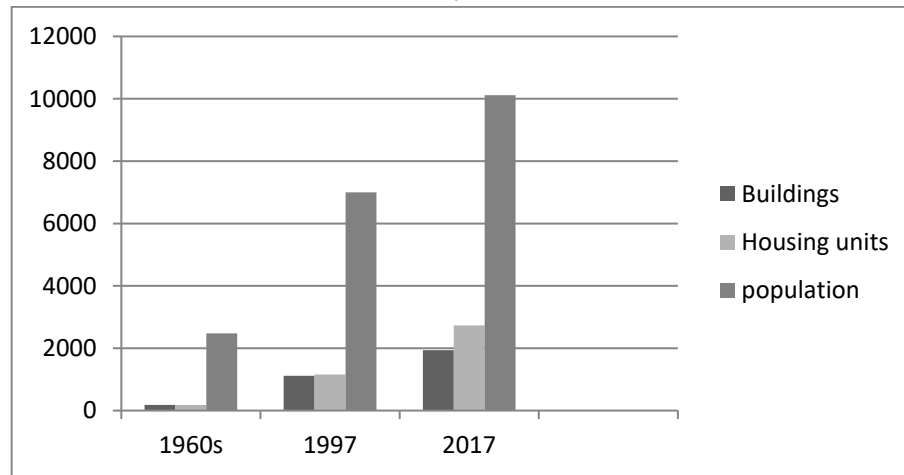


Figure 3. 23 Buildings, housing units and population ratio

Source; Author

The natural population increase, the political forces, and socio-economic dynamics, which have caused an increase of financial influx to the town's residents promoted active urban growth that especially increased through the past two decades with the coming of the Palestinian authority. The current urban form of the town is the physical manifestation of all those forces and factors, noting the dense, compact and irregular building fabric shown in the solid and void map in figure (3.25).



Figure 3. 24 Solid and void pattern of Qaffin town 2017

Source: Author

Chapter Four

Urban morphology of Qaffin

This chapter will analyze elements of the urban form of Qaffin, by documenting the type and classification of Qaffin's town plan element and tracking the transformative progression which the building fabric has witnessed through different periods of the Last century, based on the appearance of new buildings types, see figure (4.1). The chosen periods of this analysis are those that were chosen through the previous chapters for the urban development of Qaffin, this parallel metrological analysis of the building fabric along with elements of urban form that are Block pattern, street network, is meant to define and specify the effect of the dynamics of urban development on the transformation of urban form, and identify the causes which have triggered the deviation of Qaffin's nonhomogeneous and disintegrated urban form.



Figure 4. 1 Qaffin town in 2019

Source: Noor Tome

Different zones of Qaffin ground plan are chosen to analyze the development of the town plan's street network, block pattern, buildings pattern, and land utilization, to compare the progression and change of physical characteristics of those elements. Since the building fabric of Qaffin has witnessed a more acute and obvious change of the urban form elements, this chapter will focus more on the process of which the building fabric has changed through more extensive analysis. Housing samples were chosen from the specified periods and then were analyzed thoroughly to explain the evolution of building techniques and technologies used, chosen materials, architectural style, and how this was materialized on the physical appearance and formation of buildings.

4.1 Urban form of Qaffin

It's best to describe the urban form of Qaffin through a brief analysis of its ground plan using the Master plan of 2017, which is the latest master plan which the municipality of Qaffin has prepared. This analysis will focus only on analyzing the three basic elements of urban form as announced by Conzen, which are town plan, building fabric, and building\land utilization. The analysis of the town plan will include only Block patterns and street patterns. Although the plot pattern is one of the most important elements of the town plan, the ground plan of Qaffin isn't divided into plots, and parcels, and there is no available data yet, instead the pattern of the buildings is analyzed through this section, considering it also an important element of the town plan. This analysis also included the land utilization in Qaffin, as it is seen better incorporated with the analysis of the previously mentioned elements than analyzed separately. This is achieved by choosing different zones of the master plan with an area of 0.5 km², that belong to different expansion periods and considerably have different characters.

The following figure (4.3), shows the selected zones for urban form Analysis, areas are selected to cover parts of old town Qaffin, and the later construction bursts, it also selected to include different land-use patterns, residential Area B and residential Area C, Commercial and public land use. These zones include buildings built in different periods through the last century, and has different uses in order to include all possible varieties of urban form in Qaffin which will serve to present a clear understanding of the transformation process of Qaffin's urban form. The selection of these Z=zones has been based on the grid division of Qaffin Municipality's Master plan, figure (4.2).

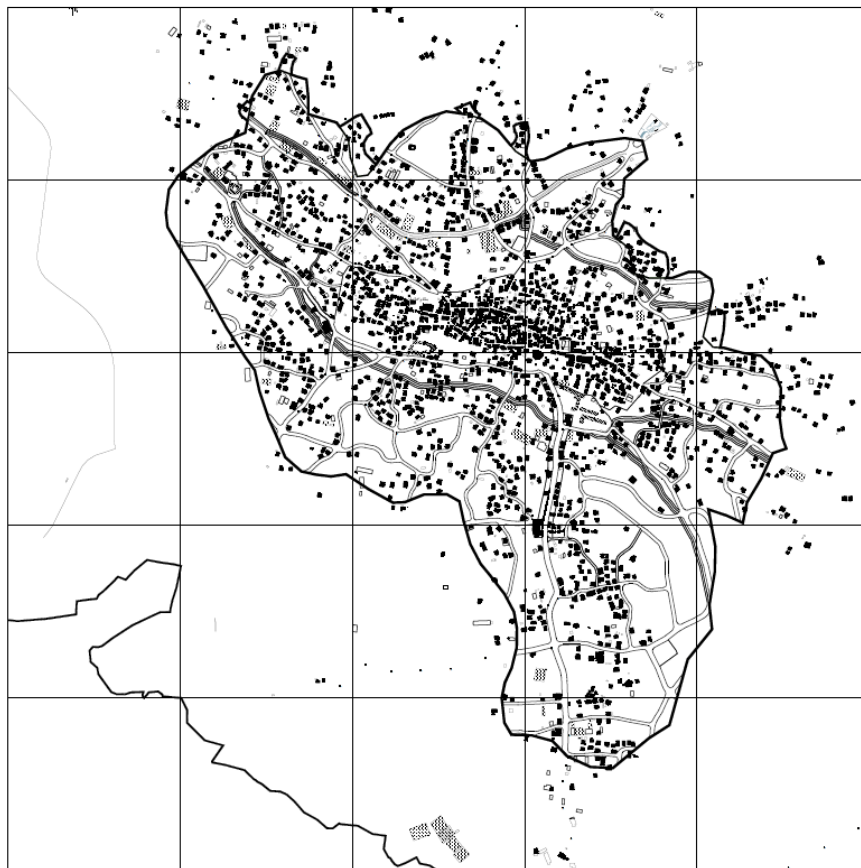


Figure 4. 2 Master plan Grid

Source: Qaffin Municipality

As for the building fabric, it's analyzed through a metrological scale starting from the British mandate period, and posts the construction of the separation wall in Qaffin. This is achieved by firstly describing the building product and architectural character of each

period, and then sampling a specific building from that period. The analytical model is best seen in figure (4.4).

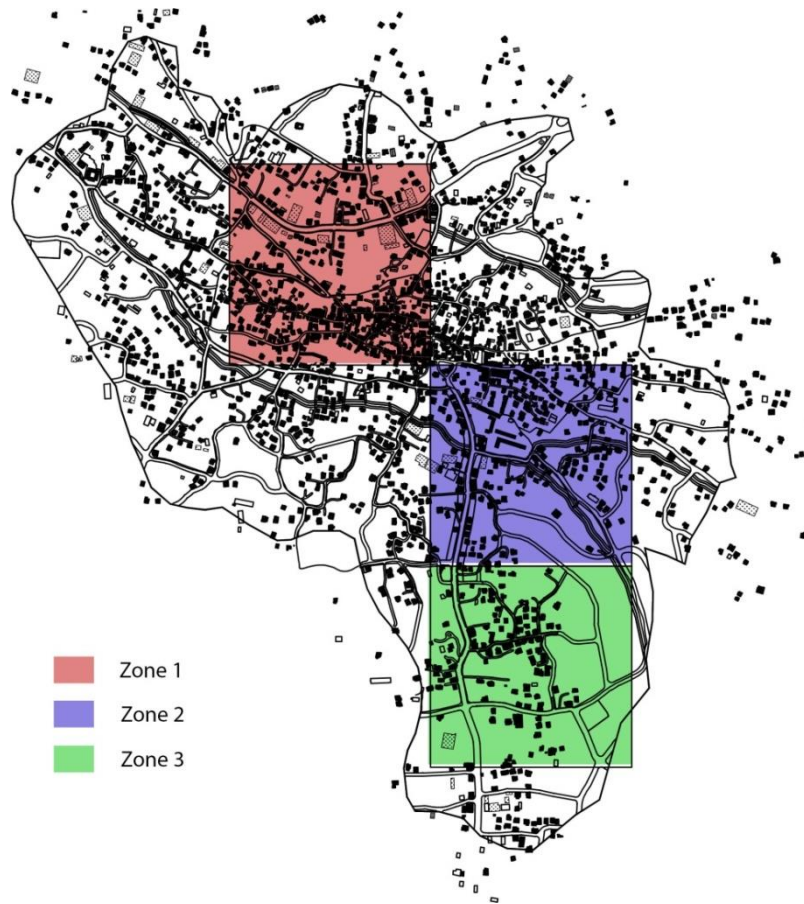


Figure 4. 3 Selected zones for urban form analysis
Source: Author

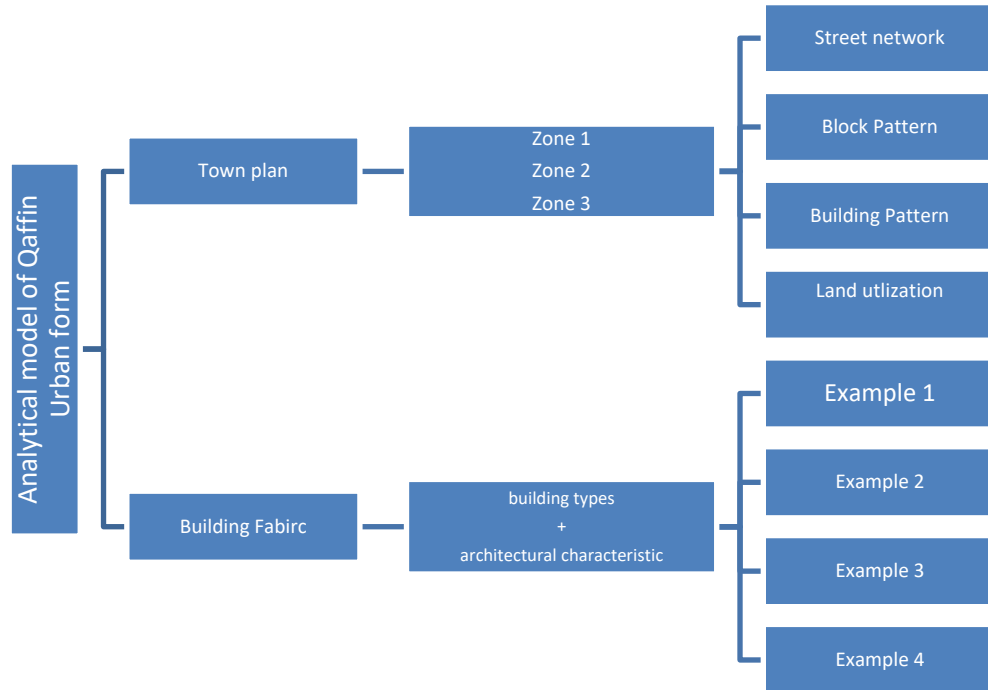


Figure 4. 4 Analytical model of Qaffin Urban form

Source: Author

4.2 Morphogenetic approach

The town ground plan has a rural character with irregular boundaries, and blocks with irregular sizes, that have few hard surfaces compared with blocks in cities or urban areas, see Figure (4.4). The ground plan has three urban belts which can be traced through a historical development map, see figure (4.5). The town has been expanding outwardly at an uneven pace through the last century, yet the urban expansion has quickened through certain periods according to the evident town plan, this process of expansion overtime has formed different zones of urban belts, subsequently creating what M.R.G Conzen have referred to as Fringe belts.

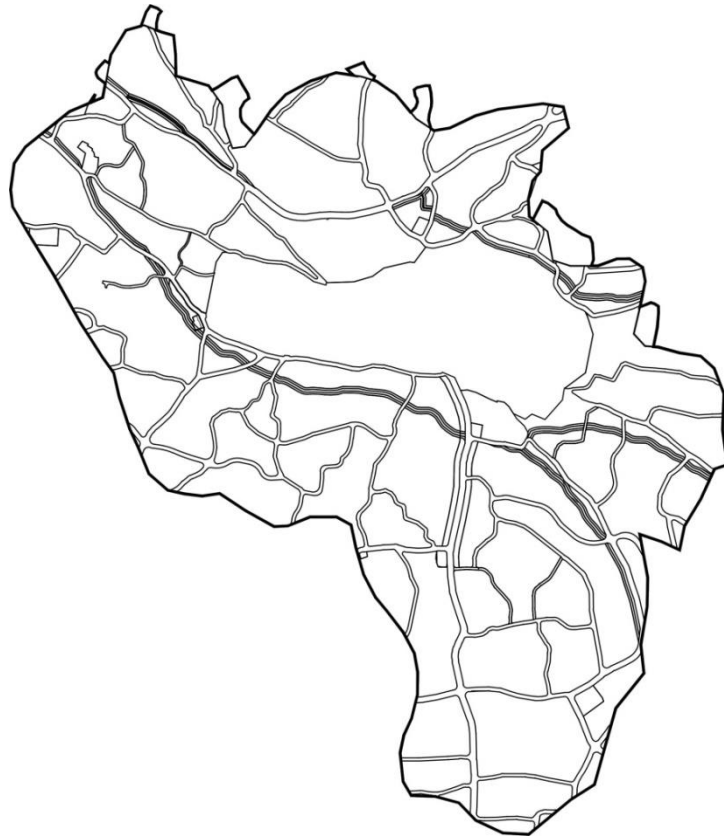


Figure 4. 5 Natural blocks pattern of Qaffin's Master plan

Source: Author

The first urban burst has happened just as people started exceeding the old town periphery during the Israeli role, and the second can be noticed post the coming of the Palestinian Authority and through the 1990s, the town people through this period had to choose to expand on agricultural fields and replaced farmed land with crops, cattle grazing land and greenhouses. The third burst has happened in the last decade, Post 2010s where a construction boom has swept in the town to the point that the Master plan meant for urban expansion has exceeded its limit and the town requires more land suited for urban growth.

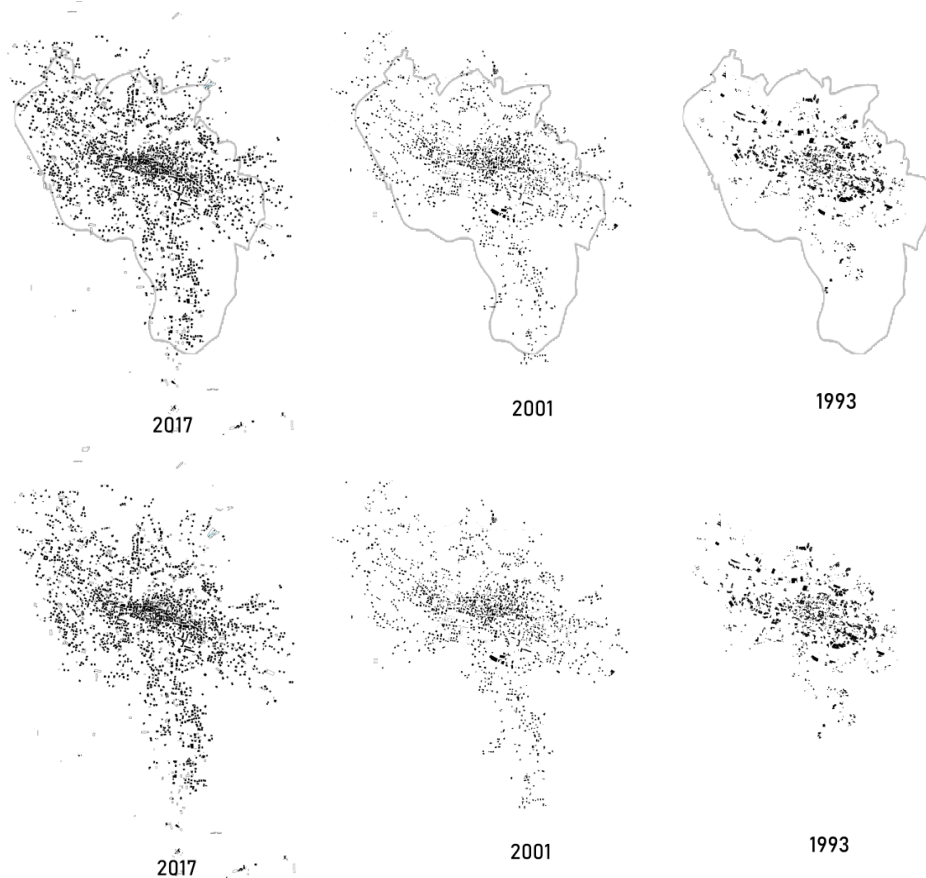


Figure 4. 6 Urban expansion between the years

Source: Author

Through this burst, people had to exceed the master plan border which is the Area B border into Area C, in this Area Building allocation gets more random and less dense. As there are only about 200 buildings in Area C, which is about 7% of the town's buildings. The fringe belts formed according to the town expansion process, and so the first burst was bound by the periphery of the old town, the second burst was bound by the agricultural fields which have surrounded old town Qaffin before the building expansion has replaced most of it by 2000s, and the last burst was bound by the periphery of the master plan, which construction boom started exceeding this line after the 2010s.

The following map in figure (4.7) demonstrates the boundaries which have affected the morphogenetic regions of Qaffin town plan. The boundaries drawn are given a 4-tier hierarchy in which they have affected the morphogenetic development of Qaffin, and the

previously explained urban bursts. The first tier or order of boundaries, are the boundaries of Old Town Qaffin, which have contained urban development onto the Israeli Occupation period. And the Master Plan boundary, which is also Area B boundary, this represents to the town of Qaffin a limit for urban development that they didn't exceed, until the last decade; after 2010's. The second order is traced on the boundaries of Areas in the land use/land utilization map of Qaffin that are Classified as Residential C. Those areas follow old town Qaffin with the densest building pattern. The third order represents the boundaries of the plots within the Master plan boundaries, and the Fourth order represents the outline of the plots which urban expansion has reached outside the Master plan boundaries.

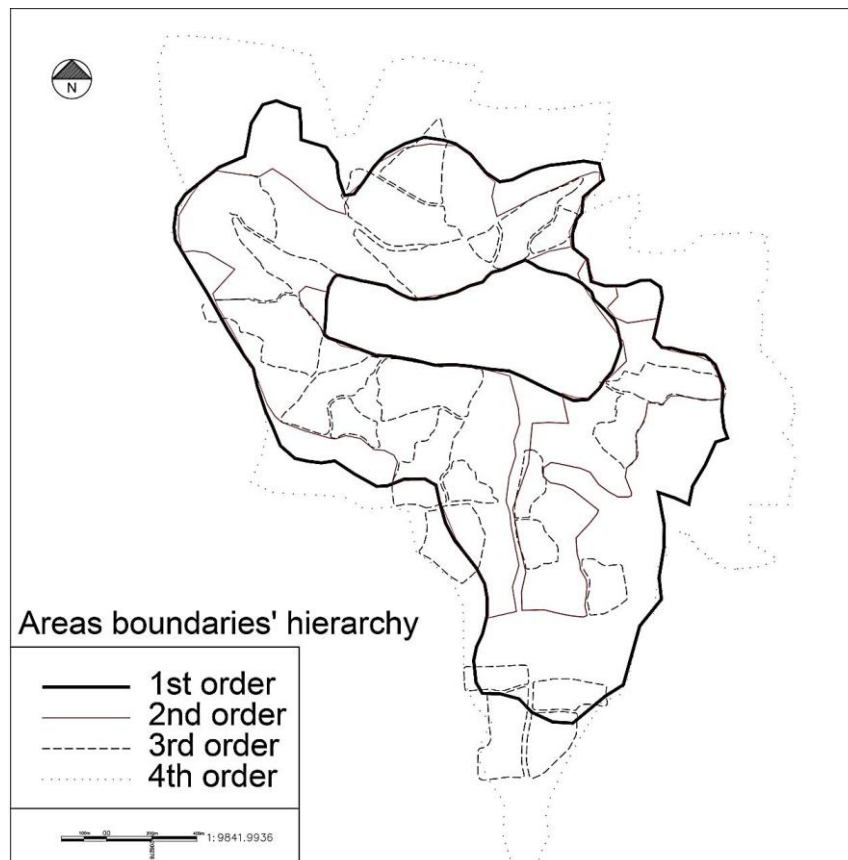


Figure 4. 7 Morphological boundaries of Qaffin

Source: Author

4.3 Urban fabric

Qaffin like most Palestinian towns isn't the invention of pre-planned urban grounds, but the result of a long time natural urban growth and urban expansion process that for the most part have lacked a proper planning scheme. This resulted in today's irregular and disorganized urban form, which can be noticed in every single element of the existing urban form of the town.

Blocks patterns in Qaffin are natural Blocks that were designed based on the typological character of the area, and they are yet to be registered by the Palestinian Land Commission. The blocks aren't dissected into parcels, which contributes to the irregularity of the street network and building pattern. The planned street network by the municipality is traced on the outline of the Blocks, however, the actual existing street network differs greatly from the planned one, as most of them do not exist on the ground, and the ones that do are thinner, and do not completely follow with the planned route, while some existing routes are not planned at all. Those characters signify the fact that the development of street networks lags behind the growth of building fabric, because buildings are constructed first, and streets are paved second.

4.3.1 Zone 1

The first selected area, Shown in Figure (4.7) is chosen on the periphery of old town Qaffin and part of the northern area of Qaffin. Old town Qaffin is the oldest inhabited area of Qaffin, and some archeological shrines within the area, like Al-nabi Othman shrine, are said to be more than 700 years old. Consequently, Old town Qaffin have the oldest streets and buildings and has witnessed more extensive alterations. While the

northern area originally was an agricultural field before urban expansion reached it through the Israeli occupation period, and still has traces left of its agricultural identity.

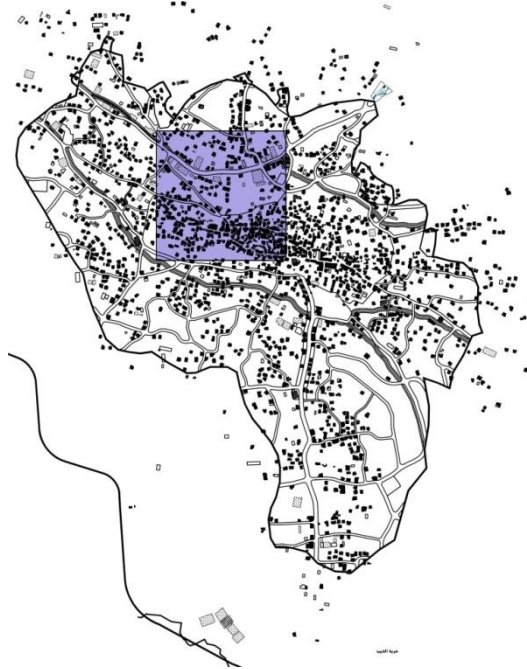


Figure 4. 8 Zone 1 location in Qaffin Master plan

Source: Author



Figure 4. 9 The ground plan and Area photo of Zone 1

Source: Auhtor, Geomolg

A brief look at the town plan, see figure (4.8), shows the difference between Old town and its neighboring area to the north, where the old town Qaffin has a compact building fabric, where mostly all blocks are fully occupied with buildings, houses are near to each other and at some points form cluster buildings. the Northern side of the zone shows a less compact pattern, with greater space between the buildings, either completely vacant

or occupied with greenhouses, see figure (4.9.a). buildings scale varies in each region, as public buildings like schools, the municipality building, and mosques have the largest areas. Residential buildings also vary in the area based on the housing type, single house, villa, semi-attached or multi-story buildings.

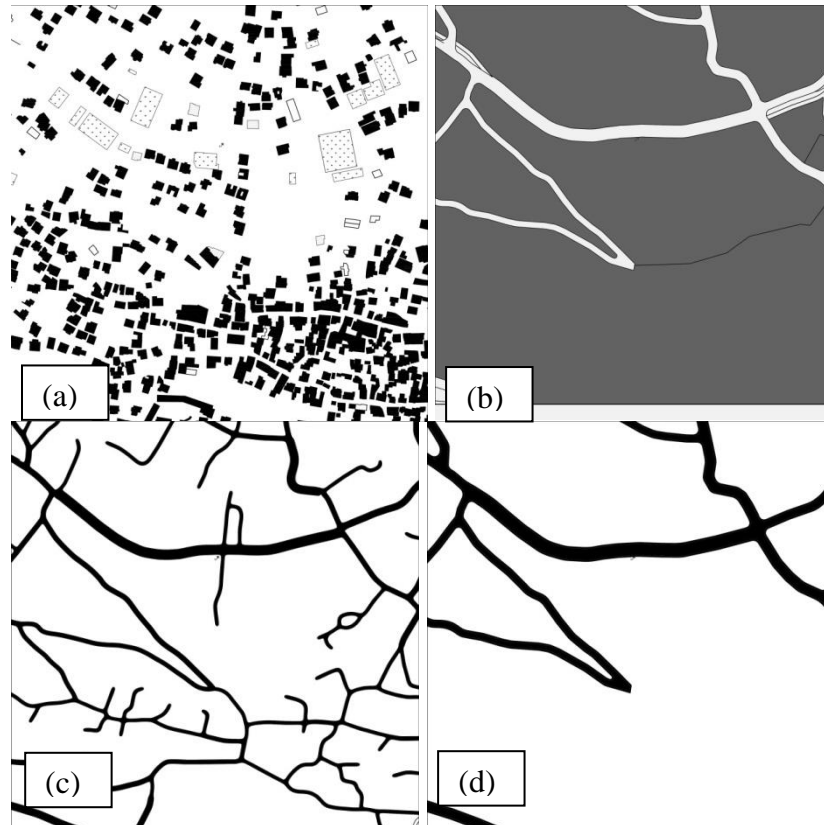


Figure 4. 10 Building Pattern(a), Block Pattern (b), and Street network pattern (c) and (d), of Zone 1

Source: Author

The block analysis, in figure (4.9.b) shows almost the entirety of old town Qaffin zoned into one continuous block, and it's the largest block in the Master plan, that have irregular boundaries and stretches horizontally, unlike the town ground plan which stretches from north to south. The change of urban growth direction is mostly caused by having confines on the horizontal direction; the separation wall on the west side, and illegal Israeli settlement expansion on the East.

The street network analysis, shown in figure (4.9.c), shows more interacted and tangled, narrow routes to serve the dense building pattern, which is very similar in nature to the paths and alleyways of Palestinian old towns⁹. The difference is clear in figure (4.9.d) between the planned street network and the existing one, as mentioned before the planned street network is only designed between blocks, and so the old town being one plot only has no planned streets that goes through it. Crossing the boundaries of old town Qaffin, street network gets less complicated and more regular.

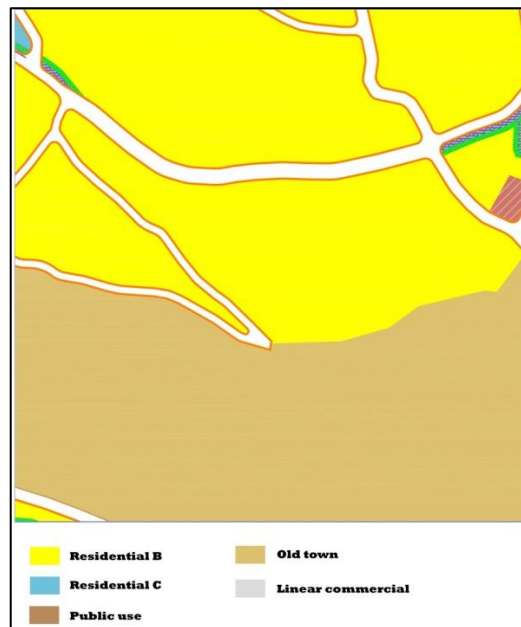


Figure 4. 11 Landuse of Zone 1

Source: Author

Land use classification has changed between 2001 and 2017, removing the residential a classification which allows for greater setback (5 m from, 4 back, and 4 from the sides) and only two stories in height, and 36% ground area to land area. The Master plan as of 2017 had only Residential B¹⁰, and Residential C¹¹, which allows for taller and larger

⁹ Those refer to the villages and towns which have developed at the first of the 20th century, and still make the core of the contemporary villages and towns.

¹⁰ One of the land classifications set by the Building law through the Jordanian Period and is still used by the municipalities in the West Bank. Residential B allows for a 42% ground floor to land area, and requires 4 m front setback, 3 m on the sides, and 3 m on the Back.

¹¹ Allows for a maximum of 48% ground floor to Land Area. Setbacks are: 3 m on the front and the back, 2.5 m on the sides.

buildings for each plot. This is directly caused by the land scarcity the town is facing. The land use classifications of the current Master plan can be seen in figure (4.11)

For zone 1 land use classifications, old town, which can be seen in figure (4.10), has special regulations that allow minimal or no setbacks, and maximum built to land area percentage, however, those regulations are not fixed and every case is reviewed by the municipality council to determine, the building utilization, its ground dimensions and its allowed number of stories. The rest of the zone is classified as Residential B, except for a public use parcel that is used as a cemetery.

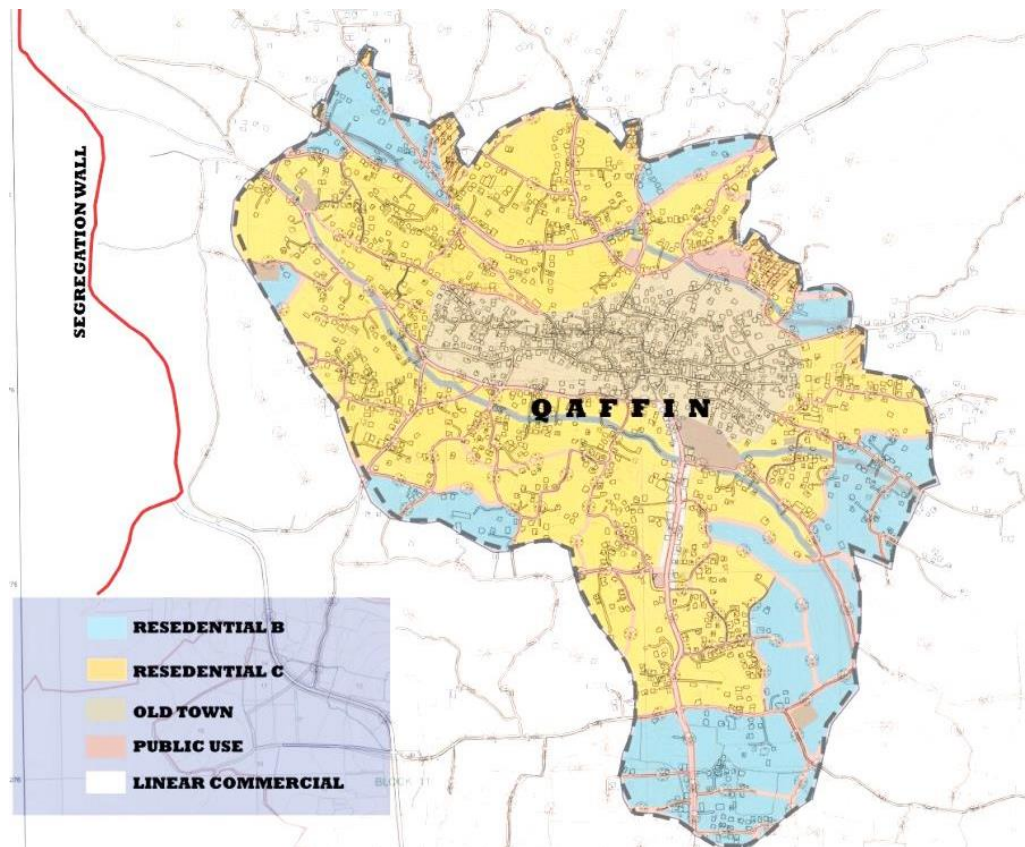


Figure 4. 12 Master Plan of Qaffin 2017

Source: Qaffin Municipality, edited by author

4.3.2 Zone 2

Zone 2 is selected in the western side of the ground plan, see figure (4.12). Urban development of this period has started through the Israeli occupation period, and picked

up pace through the Palestinian authority period. In figure (4.13) the built area takes multiple forms and has different patterns.



Figure 4. 13 Zone 2 in master plan for urban form analysis

Source: Author



Figure 4. 14 ground plan and aerial photo of Zone 2

Source: Author, Geomolg

The building pattern shown in figure (4.14.a), is a nonlinear cluster pattern, and spread unevenly according to the land use classification of the plot. Building fabric of this zone is loose, with irregular and scattered buildings density, that ranges between a semi-compact and an open fabric pattern. The arrangement of houses is affected and follows both street pattern and plot pattern, and it is important to note that some houses are positioned without following street direction as the biggest influence of buildings position in such towns is land ownership.

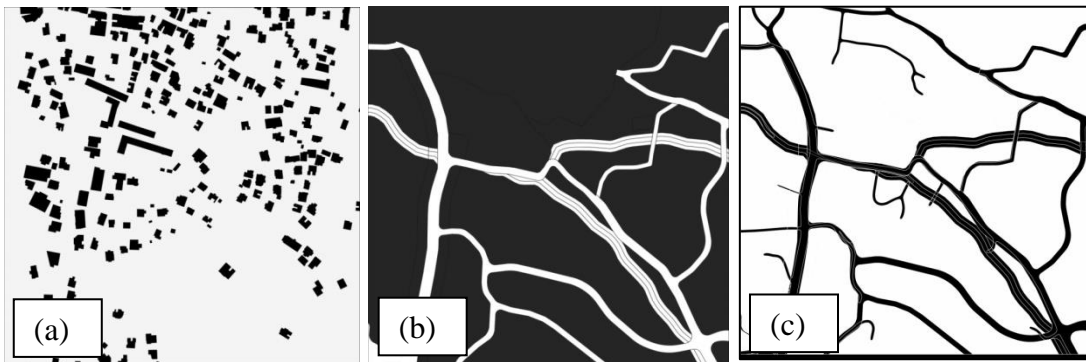


Figure 4. 15 Buildings Pattern, street pattern and block pattern in area selected

Source: Author

The Blocks pattern, in figure (4.14.b), shows large irregular and interconnected blocks, and small sized irregular blocks, the plot pattern lacks any kind of linear or curved lines, and is by all rough with a primitive rural form. Blocks are drawn to suit the topographical nature of the town and have kept the same outline since before 1948. Blocks are not even divided into parcels, as the Regional Palestinian Master plan committee have not surveyed Qaffin town as of yet, and thus the Master plan is yet to be prepared.

As for street pattern, shown in figure (4.14.c), the streets have followed the plot pattern and not vice versa. The blocks (or blocks) of Qaffin have been drawn as mentioned previously, and with the urban expansion, the streets have followed the pattern of those blocks, which expectedly resulted in the irregular and rough pattern of the streets. Most streets in town are narrow, except for the main street, which is the widest and runs from

the center of Old town Qaffin and to the south. Streets are few in numbers compared with the size of the block and have few crossing points, most of the network consists of roads and paths especially in old town Qaffin, where the near juxtaposition of houses doesn't allow for main vital streets. There are also high rates of dead-end street that is the result of an unplanned and unfinished street network. It's where the streets follow buildings construction, as the main objective of the municipality is to provide houses with concrete paved streets.

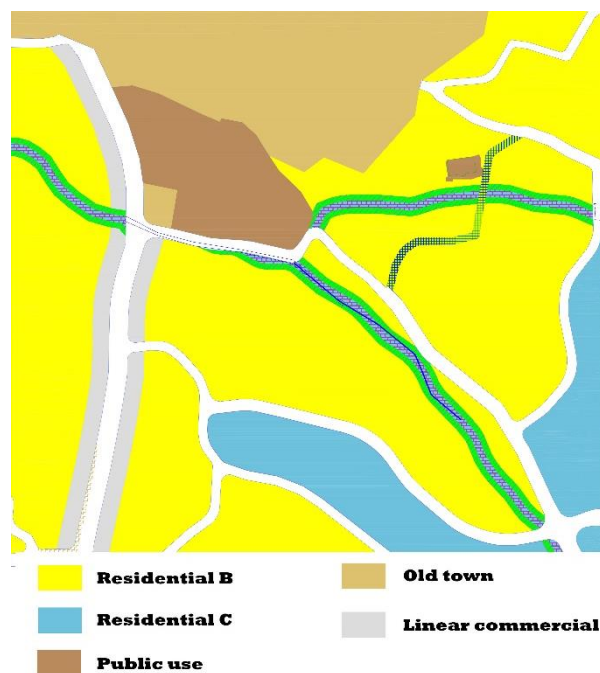


Figure 4. 16 Land use of area selected

Source: Author

Landuse pattern in figure (4.15), in the selected zone is interacted and unclear, public buildings land use follow the previously built location of the town schools which was chosen by the town people more than 40 years ago, and the municipality itself, although a public building, isn't located in the public buildings area, but in old town Qaffin. This is because originally Qaffin's master plan was planned during the Israeli occupation period into three land uses only, residential 1, residential 2, and old town. As shown in

figure (4.6). And so, the construction of public buildings in the town happened before this landuse classification which was added in 2001.

4.3.3 Zone 3

Zone 3, which is shown in figure (4.16), is selected in the southern side of Qaffin, and this zone is considered one of the newest zones which have witnessed urban development in Qaffin. Urban development in this zone have started through the Palestinian authority period and quickened pace through the last decade. In the ground plan in figure (4.17), the building density increases near the main street of Qaffin, and decreases moving farther from the streets, as the west side of the zone is almost vacant of buildings.



Figure 4. 17 Location of selected zone 3

Source: Qaffin Municipality, edited by Author



Figure 4. 18 Ground plan and aerial photo of Zone 3

Source: Author, Geomolg

The building pattern, shown in figure (4.18.a), as mentioned previously is denser on the main street side, the reason for this is the main street comprises the most vital commercial area of Qaffin, and like many different towns and cities in Palestine main street present commercial potential and future development, as they are the vines that connect to neighboring towns. The block pattern in figure (4.18.b) albeit still irregular, it shows more uniform shapes compared with the previous two zones, the blocks almost form square shapes at some areas, they are also smaller in size.

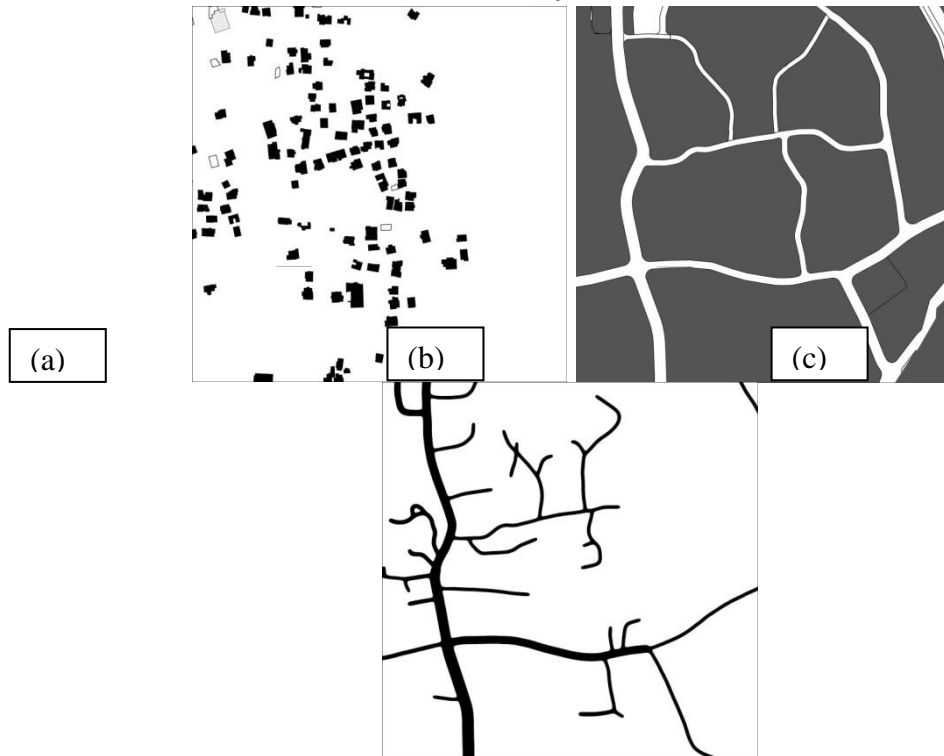


Figure 4. 19 Building Pattern, block pattern and street pattern of Zone 3

Source: Author

The existing street network in figure (4.18.c), follows mostly the planned street network, except for the undeveloped areas. While pathways and narrower streets branch out of the main roads to connect the newly constructed buildings to the street network. In the land-use classification in figure (4.19), the blocks nearer to the old town are classified as residential C, while those farther away are classified as residential B, meaning the farther is the plot from the town center, the building density gets less dense. The land aligned on the sides of the linear street of Qaffin which is expected to have a more vital commercial activity isn't all classified as linear commercial, however people of Qaffin expect this classification to be changed soon.



Figure 4. 20 Landuse of zone 3

Source: Author

4.4 Building form

The building form of the town has mixed styles, mixed colors, different buildings scales, and the past century's architectural produce is displayed clearly through the urban fabric of the town. Most of Qaffin's buildings lay within Area B, and so are included in the master plan and follow the building regulations, see figure (4.21). Through this section, the chosen houses for analysis are all from Area B, as it's the area that was directly affected by all of the dynamics. The town building fabric changes through different zones within the Master plan, older buildings in old town Qaffin happen to have a smaller scale than newer buildings in residential B and C, and multi-story buildings are mostly located near Qaffin's main street. Single houses with gardens which are more elaborately executed than others with more architectural details, are referred to in the local Palestinian context as "Villas". In Qaffin those villa houses, the larger sections of villas are located to the farthest edges of the Master plan.



Figure 4. 21 Qaffin's colorful architectural scenery

Source: Author

The transformation of the building fabric in Qaffin will be examined through the different periods of the last century, in order to demonstrate how the transformation process and the development in architectural style and building techniques was affected by political shifts of those periods. Although usually the start and end of styles don't have a specific date, this section will analyze the town's building fabric based on the political incidents that the town has witnessed which have affected it directly in so many aspects,

4.4.1 Buildings fabric through the Jordanian period

Through this period buildings affected by social ways of living kept changing, and they started to have starker differences to their precedent architecture and also to each other. Houses had multiple forms other than the one-level single house, this is due to the use of concrete accompanied by newer building techniques that affected the form of the building. Houses during this period were constructed using newer technologies and techniques, like using either stone joint by mortar or cement, or poured concrete carrying over flat slabs or reinforced concrete, replacing the typical and traditional thick bearing

walls that carried vaults, or flat roofs. In the lateral phase of this period appeared the skeletal concrete system, with reinforced beams carrying over reinforced flat slabs. A lot of today's remaining architecture from this period has witnessed multi restorations, mainly changing the exterior and interior appearance by whitewashing the interior, and covering the exterior walls with stucco, see figure (4.22).



Figure 4. 22 the exterior of a building from the Jordanian period currently covered in stucco.

Source: Author

Today what's left of this period's architecture is very little, mostly either changed and renovated completely to look more contemporary and more coherent with today's ways of living, or demolished by the people and replaced by newer buildings, the most common reason for demolishing old buildings is the need to expand vertically, as old buildings are unable structurally to carry such high loads. Old town Qaffin traditionally had a dense and low-rise building fabric, but due to the pre-mentioned process of renovating and replacement, the physical form of buildings has changed due to the vertical expansion, while the pattern of buildings on the ground still hasn't changed due to the unchanged building regulations issued by the municipality regarding old town Qaffin. The current building form of Old town Qaffin has a compact building fabric and has buildings of irregular scale, where small century-old peasant houses are juxtaposed to much larger multi-story contemporary buildings, Figure (4.23).



Figure 4. 23 Buildings through Old Town Qaffin
Source: Author

4.4.1.1 Architectural characteristics

Architecture had changed considerably and shifted from the traditional style to a more modern style through the Jordanian period. Influenced by new technologies and new materials, like the use of concrete bricks. The new building techniques allowed for the appearance of two-story buildings in Qaffin, albeit it was very rare and people still preferred to expand horizontally. It also allowed for greater areas, and more options for interior configurations and spatial arrangement. Wider windows and doors openings also became familiar through this period. Although, in so many cases and especially in villages, such as Qaffin, people still opted for smaller openings for privacy concerns, especially when the house elevation is facing the street side.

People who became more financially capable in this period, like those who have immigrated to the Gulf, tried to display their new economic status through building new houses, that are larger in scale with comparison to the usual and typical houses of the town and had a new modern architectural style, such as the Veranda house which is a linear building with an aligned connected veranda that came to be so popular in the 1950s. Therefore, this period marks the first construction thriving that was caused by economic reasons.

Another example of how the economic status affected buildings typology through this period was the material used for the house exterior, as earthly colored stucco was the most common and affordable material used to cover the exterior walls, people with better financial situation choose lime stone from Qabatya for their newly built houses.

4.4.1.2 The Veranda House: The Rashid House

Located in the old town Qaffin in Al-Hawakeer Quarter, a house hidden from the street side and is only accessible through an old shed that is used as a store, see figure (4.24). The Rashid house is a single-family house that was built in 1954, the owner Hassan Rashid lived in Kuwait and after the house's construction was completed, Rashid has never lived in it. The house, see figure (4.25) and (4.26), after a few years was rented to be used as an elementary Girls school between 1960-1965, after that it stayed vacant and abandoned to this day.

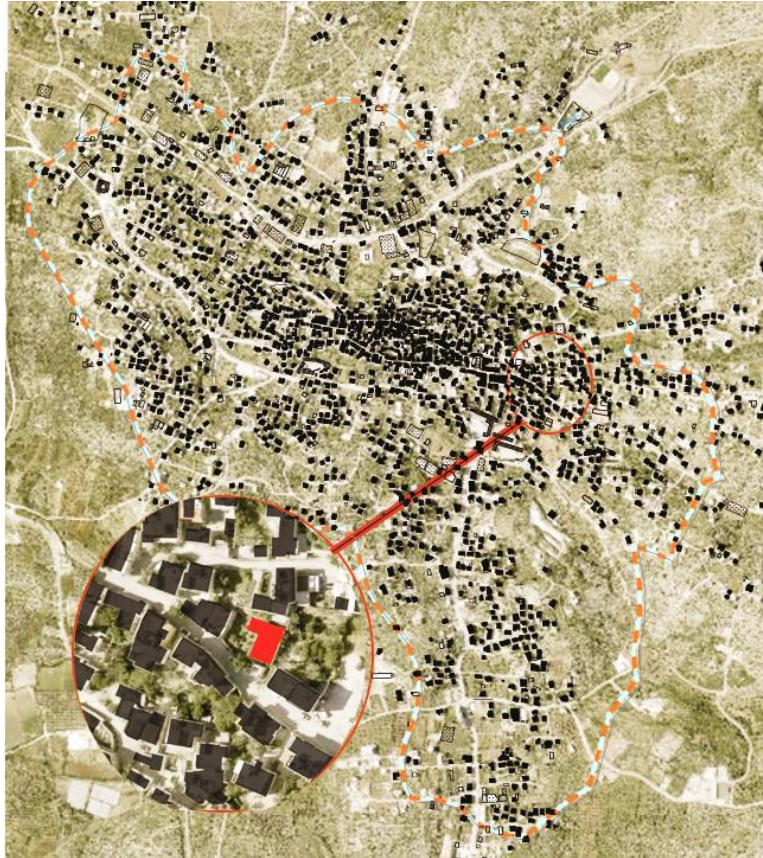


Figure 4. 24 Al-Rashid house location in Old Town Qaffin

Source: Author



Figure 4. 25 Alrashid house Veranda

Source: Author



Figure 4. 26 Alrashid house garden and veranda from the northern side

Source: Author

The house is an example of the Veranda house that those who immigrated to the gulf built in their hometowns. The house is located to the side of the land plot and is directed towards a garden that is planted with loquat and lemon trees. The house itself consists of four rooms in L shape formation directed and opened to a veranda, and a fifth room that was added later on as an extension, see figure (4.27). the rooms are also opened to each other with either interior doors or windows, the house has four doors that connect it with the exterior and all its windows are directed towards the house garden which is located to the west of the house. This makes the house extremely fluid in circulation and well connected with its exterior (Veranda and Garden), see figure (4.28).

As for the eastern side of the house, it is a completely solid facade, with neither doors nor windows as it is connected to the neighboring plot, this is to ensure privacy for both the residents and their neighbors. The locals traditionally preferred their houses directed to the west, and they referred to the western side as “the seaside”, because the Mediterranean Sea is located to the west of Palestine, while the eastern side is less preferable as rooms get more sunlight and therefore are more exposed to heat especially during the summer.

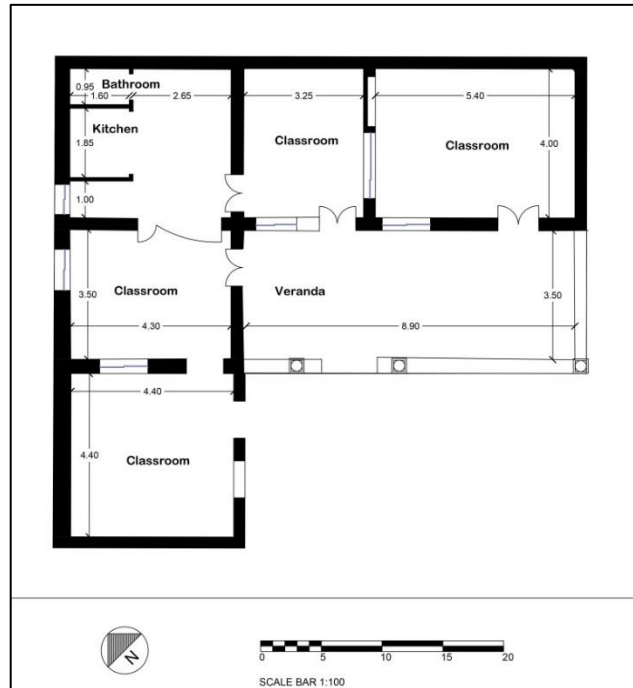


Figure 4. 27 Alrashid house ground floor

Source: Author

The house has a reinforced concrete roof. The veranda side is covered with yellow tobzeh lime stone, while the rest of the house is covered with stucco (a type of plaster that consists of cement, sand and water, that is hand troweled) which has an earthy color similar to the stone. Windows and doors frames are made of wood, and windows are barred with protective railings. The house's exterior walls at some point after its construction (not clear when exactly) were washed with blue paint, see figure (4.29).



Figure 4. 28 The blue painted tobzeh stone of Al-Rashid house



Figure 4. 29 A classroom

Source: Author

4.4.2 Building fabric through the Israeli occupation period

Building fabric changed through this period as a natural response to the new technologies and techniques that were coming into the country. For instance, using concrete bricks and skeleton concrete systems became the most common construction technique used.

The skeletal system used allowed for adding up more stories and also made massing easier so newer shapes and plan formations started to appear, and thus appeared two or three-story buildings, increasing the vertical dimension of buildings. Duplex houses and semi-attached houses appeared through this period, although in a smaller ratio compared with the dominating single house. As a result to the multi-levels in buildings appeared staircase, the staircase is specified for vertical circulation and is directly attached to the buildings, and could be accessed through the front door of the housing units. Otherwise it's completely segmented from the houses as a space, see figure (4.30).

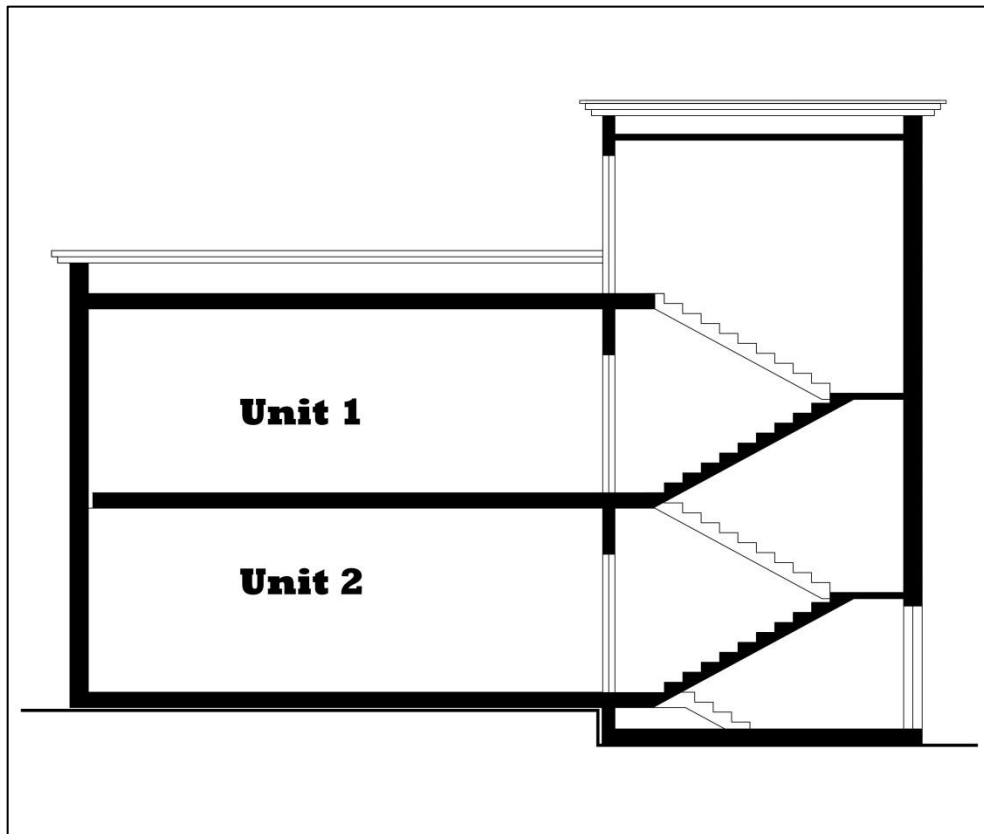


Figure 4. 30 A cross section of a staircase adjoining Two units

Source: Author

Public buildings with larger scale such as schools and commercial buildings, also appeared through this period in Qaffin, as form followed the function of such buildings. Commercial buildings had linear forms aligned to the streets and composed of a row of small stores, and newly built schools also had linear form of class rooms opened to a connecting long veranda that functions as a corridor. Before this period in Qaffin, schools were never built as a specific building for such function, rather schools used to occupy houses large enough that could suit the process of education, see figure (4.31).



Figure 4. 31 Schools district in Qaffin

Source: Google maps

4.4.2.1 Architectural characteristics

Buildings had a simple and rigid personality apparent in the relatively small squared concrete houses, with square windows which lack any kind of ornamentation. Through this period used materials differed greatly, traditionally wood used for windows and doors completely disappeared, as people opted for more durable and low maintenance materials, such as aluminum and Iron. The start of aluminum use appeared through the shutter window in residential buildings, and Iron-framed glass windows in public buildings, later on, the use of sliding aluminum glass windows became the most dominant and was used broadly, and to this day it is still the most dominantly used, see figure (4.32).

Stucco finish was used more regularly as stone finish use kept decreasing. This drop-in using stone finish is due to several causes, firstly, stucco was spreading through most of the Northern villages instead of stone through this period, and it became the normal appearance for the village house. Secondly, stucco finish was much cheaper than stone, and for a town that was struggling economically, stucco became the most popular and reasonable choice between the town's people. Through the end of this period appeared

the use of plaster finish, that is smoother than stucco and more paint like with white or light colors that were similar to the colors used in Arabic towns behind the 1948 towns and those of illegal Israeli settlements.



Figure 4. 32 shutter aluminum windows, and sliding aluminum glass windows barred with protective iron railing

Source: Author

4.4.2.2 Mixed use buildings: Abdelraheem Sabbah house



Figure 4. 33 Abdelraheem Sabbah house

Source: Author

The house of Abdelraheem Sabbah, shown in figure (4.33), is located in the heart of old town Qaffin, right next to the municipality building. The house is placed atop a row of small commercial stores, one concludes the office for the transportation service of the town. And so, the house is placed in the most publically active point in town. The ground

floor of the building was constructed in the 1970s, while the first floor and the staircase were constructed between 1981-1983, by a local Master builder called Motee' Harashe. The house is a basic model for the town architecture in the 1980s', it has an earthly colored rough stucco finish that has gone grey with time. It's formed of two bulky masses, which lack any additions or ornamentations. Squared windows with prominent concrete trim. The house has shutter aluminum windows, even the balcony on the right was closed with aluminum shutter windows. Later on, as an adjustment, the house owners placed newer sliding windows from the inside of the house, with the aluminum shutter still in place. While the bathroom has very small windows as to upkeep with privacy concerns, see figure (4.34) and (4.35).



Figure 4.34 newly added Aluminum windows

Source: Author



Figure 4.35 Side elevation of Sabbah home

Source: Author

The area of the house is relatively small with an area of 100 sq. Meter it contains two bedrooms, one bathroom, a kitchen, and a salon that is used both as a living room and a guest room. Yet the house owners use a room in the ground floor right next to the staircase as a guest room for men or visitors. The house is accessed by the staircase door which is opened to the house garden which is shown in figure (4.36).

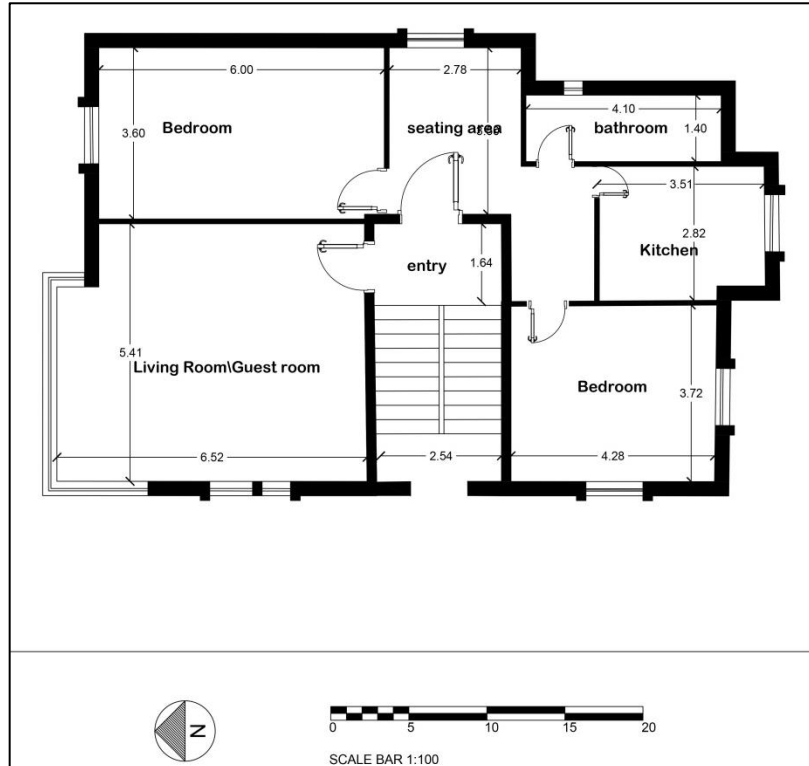


Figure 4. 34 First Floor plan of Sabbah home

Source: Author

The house's exterior and lack of architectural details is the same from all sides, see figure (4.36), and the front face of the house is only defined by its orientation and relation to the streets, and by the placement of the house gate, the gate is painted green iron and placed within a stone wall. It leads to a garden, which contains a paved seating area, that is shaded by a vine tree, and surrounded by a house that has some trees, and the ruins of an old house.



Figure 4.35 Sabbah home Garden and Vine tree

Source: Author

4.4.3 Building fabric through The Palestinian Authority (1994-to date)

The Architectural style through this period has started flourishing. People were more optimistic with the coming of an authority of their own nationality, that promised to voice and respond to their concern, and Qaffin like the rest of the West Bank has witnessed one of the largest construction booms as of yet. Even the architectural style has grown and changed from the stoic and aggressive style of the Israeli occupation period. Although the Palestinian authority working through the municipality of Qaffin didn't directly affect the architectural style of the town. As previously mentioned the municipality has minimal effect on the town's urban development and is mostly concerned with providing civil services and handing buildings permits. Their contribution to the town's planning is mainly concerned with the area of the building, and its relation with the land plot, as they are still following the Jordanian planning law concerned with buildings and land plot

relations. While regulations don't control the architectural style of the buildings or follow up with the construction phase, people of the town are left to their own freestyle architecture that is influenced by their life experience, occupational skills, and prevalent architectural styles within the region.

4.4.3.1 Post the separation wall

The architecture of this period is the most marked of the previous periods, and it's this architecture that has given the distinct character to the town which has drawn attention to the nature of architectural development in Qaffin, see figures (4.37). Other than the architectural style used through this period, several signs marked it which is the appearance of a multi-story building and urban sprawl in Area C.



Figure 4. 36 saeed al Zeer house and front garden

Source: Author



Figure 4. 37 pink and blue painted houses in Qaffin

Source: Author

One of the clearest signs of the urban construction boom extension in town is the Multi-story buildings, see figure (4.38), which are popping up through the town as a solution to land scarcity and an option for a more affordable housing option.



Figure 4. 38 A multi-story Building in Qaffin

Source: Author

The second sign of the extent of urban expansion is Construction in Area C. Building on agricultural land in Area C was the next solution for the urban expansion dilemma in Qaffin. As Area B is filled up which is a major problem for current and future urban expansion. Buildings in Area C don't have building permits from the town municipality,

but they apply for a building permit from the ministry of local government, which allows them to build, and they could then apply for municipal services, such as electricity, water, and road. However, it should be noted that this building permission cannot be classified as a legal permit by the occupation state, because as mentioned before, the Palestinian Authority has no power over Area C lands, and so the Israeli occupation could decide at any point to either demolish those houses or dispose their residents and confiscate the land, see figure (4.39).



Figure 4. 39 Construction in Area C, 2021

Source: Author

The general state of those buildings, mostly residential single houses, while might seem similar to buildings with permits in town, they do not display the same fine finish or care for details, and architectural details. The state of uncertainty is very clear in the general theme of the buildings, for example most houses has a raw unfinished concrete face. They are built to provide for a need, and are a direct cause for land scarcity. This does not imply that the buildings character in Area C is very much different from the town's architecture, it is in many other ways similar to some of the buildings inside Area B. As they hold similar proportions, scale, massing, and style.

4.4.3.2 Architecture characteristics Architectural characteristics 1994-2002

Houses proportions started increasing, both in-ground area and in height, architectural detailing became more prominent and used more frequently, windows and doors openings weren't limited to only squared minimal shapes, but had now more options such as arched windows, and circular openings. The materials used in exterior and interior finishes also had wider options than before.

Through this period people became more concerned with how their house would reflect on their social image, and new design ideas were used to distinguish the buildings from each other and reflect personal taste. As a large section of the town was in the construction field, those new ideas were inspired by their work experience, and not by professional architects or engineers. As Palestinian construction workers carried their new learned skills to their home towns. The construction experience Palestinian workers transported to Qaffin wasn't only excluded to architectural details, many interviewed construction men have testified to altering the structural loads, by eliminating structural members such as columns or editing the bearing loads, by adding or deducting iron bars. This is executed without the consultation of a site engineer, or even the knowledge of the owner.

Smooth plaster finish of light colors such as white and beige became dominant, along with using white limestone for those who could afford it financially. The house character or design became a sign of social significance, and the houses finish wasn't the only way people of the town used to reflect on this social significance, the architectural style and details used in the exterior of the house became a matter of innovation, which they believed could reflect their sophistication and modernity.

Roof tiles started appearing through the town's built scape, although roof tiles have existed in other regions and cities in Palestine, Qaffin like most towns surrounding it didn't use

roof tiles in its architecture till recently. It has started appearing through the Jordanian period on a small scale as windows awnings (although its materials were different from the currently used roof tiling), however, through the Oslo period, red clay tiles started being used as roof covers for small ceilings, mostly for staircases, entrances or as a decoration on buildings edges. Unlike the vernacular shapes of roof tiling that used simple Gabe or Pyramid shapes, today's roofing uses complicated forms of multi composed geometries, see figure (4.40).



Figure 4. 40 Houses with roof tiling in Qaffin

Source: Author

Architectural characteristics post separation

Stone finish use increased noting an improvement in economic situation for people of Qaffin. In the previous period people only used Qabatya¹² stone, which is the most locally used in Tulkarm in general as the Qabatya stone quarry is the closest making it the more suitable choice. Yet lately Qabatya stone isn't the only one used, with the appearance of artificial stone, it has made it easier to buy and transport stone from other quarries in Palestine, for example, Bethlehem or Hebron, which has different colors and finishes. The “stone Finish” right now displays a more diverse and varied presence, see figure (4.41).



Figure 4. 41 Villa house with stone finish, 2021

Source: Author

While plaster finish has more vivid and more playful colors than ever, people of Qaffin seem to be very proud and enthused to use more color and make it the general architectural theme of the town. Some buildings may have multiple colors, or bright colored window frames, doors, and columns.

The form has changed greatly through this period, altering from the usual rigid boxed shapes, people used cylinders, arched or semicircular walls, assembling multiple masses in different compositions. Also, Decoration and ornamentation are being used more extensively, as a way to add more character to the local architecture of Qaffin. Adding,

¹² Qabatya, a city in the north of the West Bank, near Nablus, Famous for its Stone Quarries.

quoins, arches, pediments, cornice, pilasters, architectural columns, arched windows, multi-colored roof tiles, see the following figures below.



Figure 4. 42 villa houses with different exterior Materials

Source: Author



Figure 4. 43 The unconventional forms and architectural details

Source: Author



Figure 4. 44 A different colored houses

Source: Author

4.4.3.3 Duplex house

Located on the western edge of the town, right next to the town cemetery, see figure (4.46) is Saeed Alzeer house shown in figure (4.45), which was constructed through multiple stages between (1994-2017) the ground floor initially had an area of 76 sq. as the owners

extended new rooms every couple of years till it was completed 10 years later with an area of 150 square meters. Later on, in 2017 the owner's son added a first story on top of the house so he could live and be near to his parents. The house lies on the far east of Qaffin, it was the first house to be built this far from the town center, and the house owners for many years lived alone in this area, urban expansion reached this area in 2005.



Figure 4. 45 saeed al Zeer house and front garden

Source: Author

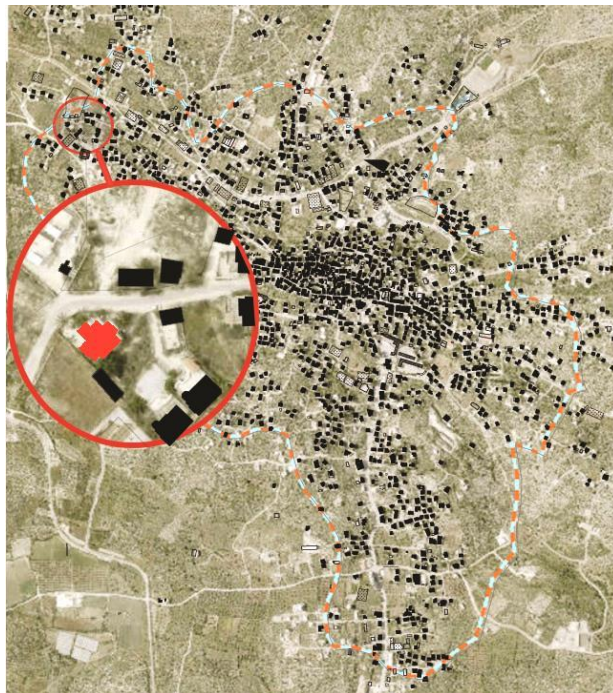


Figure 4. 46 Saeed al Zeer location

Source: author

The house is composed of three bedrooms, three bathrooms, a guest room, a living room and a kitchen. The guest room's door is on the right next to the front door, placing the door of the guest room right on the entrance where guest can enter the guest room without being exposed to the rest of the house is a recently developed cultural norm in Palestinian towns, other go to the extent of opening an exterior door to the guest room, so the guest can enter and leave the guest room without having any interaction with the rest of the house, see figure (4.47).

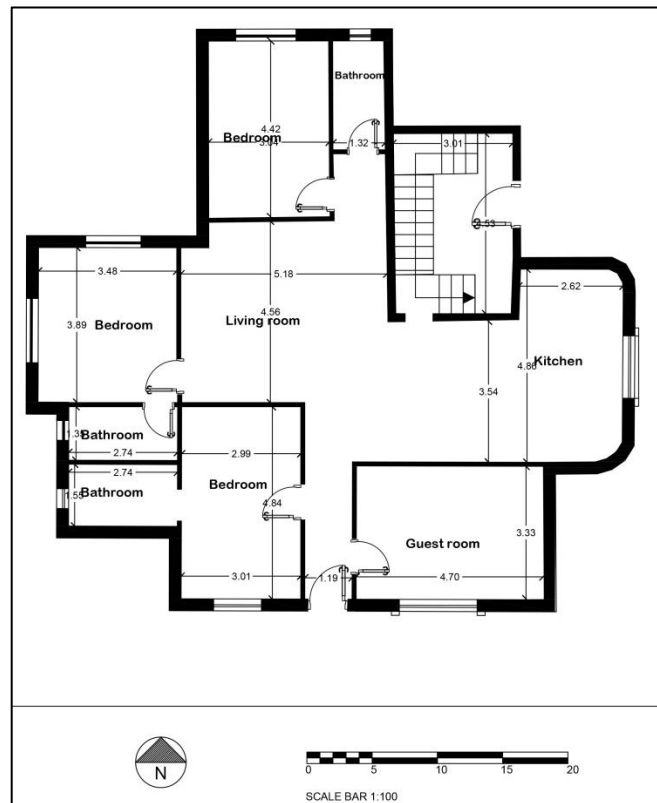


Figure 4. 47 Ground Plan of Al Zeer House

Source: Author

The exterior of the house is a sign for multi construction phases, windows has multiple shapes, different finishes and materials are used in each wall, stucco, paint, fair faced concrete and several types of tiling. Sealed doors and readjusted openings, the house interior division is also affected by the long construction and alteration process, see figure (4.48).



Figure 4. 48 Front door

Source: Author

4.4.3.4 Cottage house

The house in figure (4.49), which was built in 2012, is located to the southern edge of the town on the periphery of Area B, shown in figure (4.50). The owner is a veterinarian and his wife is a school teacher, when they decided to build their house they consulted a local builder, and he helped them sketch a schematic plan for the house. The house is directed to the east following the street side and doesn't seem to be following any climatic aspect.

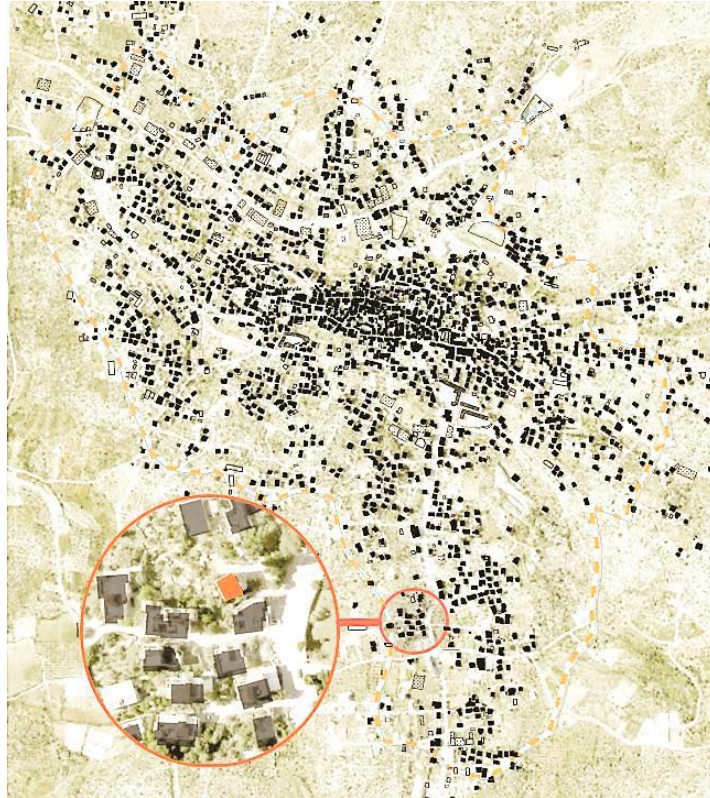


Figure 4. 49 Saeed Tomeh house location
Source: Author

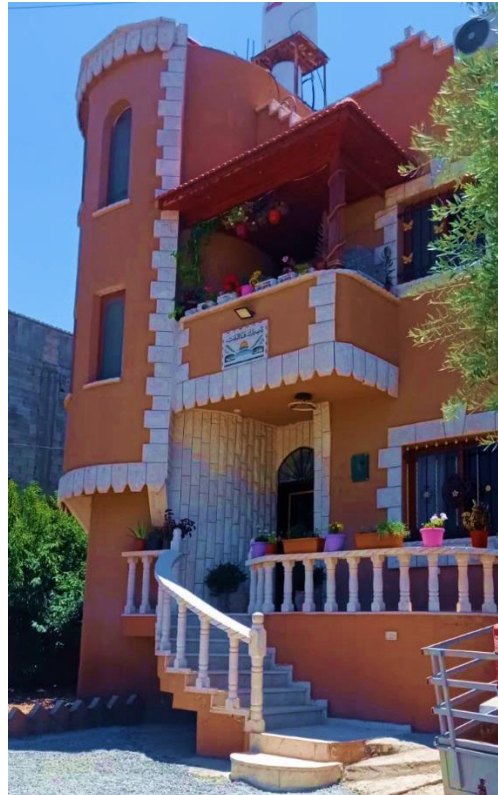


Figure 4. 50 Saeed Tomeh house
Source: Author

The house has a ground area of 80 m² and is a two-story cottage house. With a contemporary local architectural style. The Master builder has drawn an unusual composition of geometries, with a cylinder inserted into a box shape, decorated with white stone quoins lining the painted brown exterior facades. The entrance is defined with a circular terrace, ornamented with stone pilasters, and the front door wall has a white stone finish vertically aligned, see figure (4.51). Windows have several shapes, the front elevation has rectangular with a white stone quoin trim, and arched windows with no trim. While the side and back elevations have minimal rectangular windows, with no trim and no ornamentation.

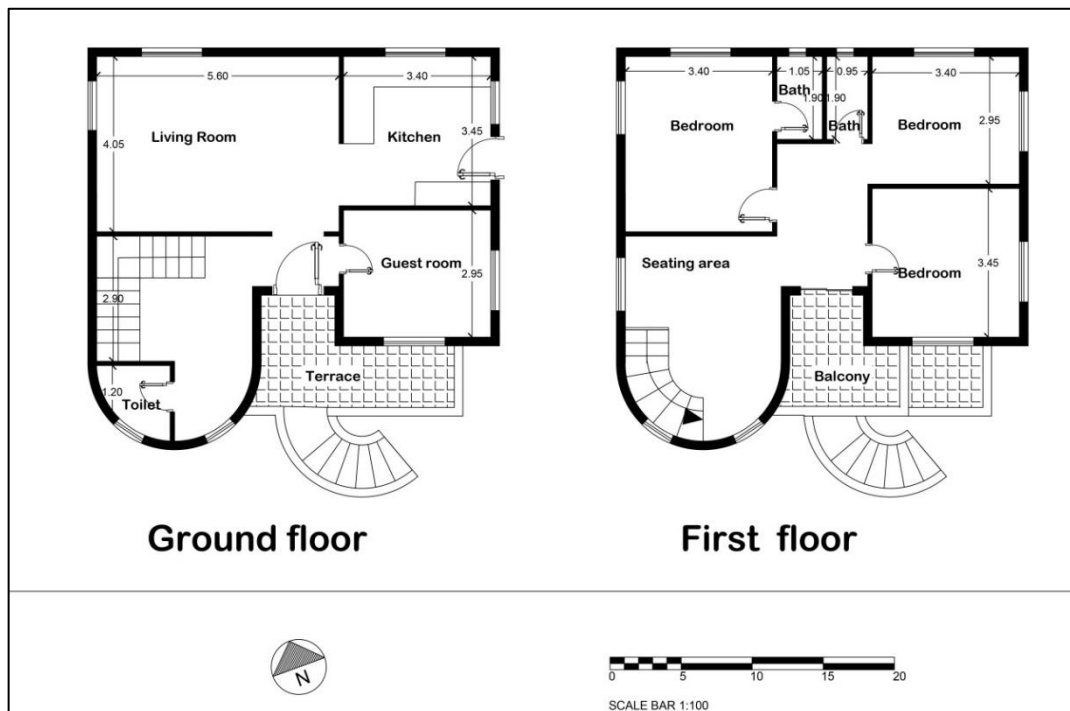


Figure 4. 51 Floor plans of Saeed Tomeh's house

Source: Author

The ground level of the house with a lobby that directs to a guest room, a living room and stairs, and the kitchen is placed to the back and faces the back yard. According to the house owner placing the kitchen in the back of the house is a cultural value, as it's considered to be a women quarter and is preferable to be placed away from the street side

to provide more privacy. However, through the past decade kitchens appeared to have a more fluid relationship with the rest of the house, with the kitchen being open to the adjacent living room, this way of interior partition is referred to by the locals as an “American style”. The first level has the more private areas, and it consists of three bedrooms and a small living room that faces a balcony.



Figure 4. 52 Saeed Tomeh Side Elevations

Source: Author



Figure 4. 53 Saeed Tomeh house exterior Details

Source: Author

The small ground area of the house (less than 100 sq. m) is a sign of a general inclination amongst the town's people to build smaller ground areas, this is due several reasons, first the lack of land available increases the land cost, which makes building vertically more affordable than linear direction. Secondly the current architectural styles of the cottage and the villa house require two stories, and the average area of the housing unit area in Palestine is 126 sq. m, meaning the ground area will be less than 80 sq. In addition people recently starting paying extra care with house gardens, so it's preferable that the built up area doesn't take the entire area of the plot, and enough area is left for landscaping. This opposes the morphology of houses through the past century as the ground area of houses was increasing with time. Up until the past two decades houses ground area started decreasing.

4.5 Chapter conclusion

The town's urban development through the past century has its evident mark on the urban form of the town. As perceived by the urban form analysis, each element of the town plan has changed and formed accordingly to the recent urban development of the past century. The street network has grown more linear and less interacted, streets also have grown in width, although they still had a rural pattern which is mostly due to the lack of involvement from the town municipality and the Ministry of local governments. The high density of buildings through the town plan, which is more concentrated in the old town Qaffin, and grows less dense towards the periphery of the town, is directly linked to the high increase of population in town. As for land utilization which has also changed from only residential and agricultural in 1991, to include new land classifications such as old

town, public, commercial and old town, also is a direct result of the urban development of Qaffin.

The building fabric is the most distinct element of urban form and the one that reflects change more clearly and freely and can be seen clearly. And in Qaffin's case, the change in building fabric is the one prominent element that has drawn attention to the overall change of the town's building form. The most important feature of the change of building fabric of the town is that it doesn't only change in the new territories of building expansion, it also changes the already built areas through replacement and adaptation. As can be seen through the old town of Qaffin, which is a mixture of buildings of different periods, and so have multiple different typologies.

The newer expansion zones include buildings from the newer periods, and so have less complexity of building fabric, but at the same time the buildings of those zones, having more area and fewer constraints, have given the locals more freedom with the architectural styles chosen for their buildings.

Generally, the locals have adopted several ornamentations and architectural techniques from different architectural styles, either historical or modern, and combined them in one construction. An eclectic way of producing architecture in a very local sense. This individual influence in shaping architecture and spatial formation is naturally influenced by the geographic context of the town. The location of Qaffin between Tulkarm and Jenin, and right on the 1967 borderline surrounded by occupied Arabic towns and newly founded Israeli project cities, have given people of Qaffin several architectural styles to consider.

The expertise the Master Builders have gained working in the 1948 occupied land has been put to use in Qaffin's building fabric. The high finish of exterior surfaces with plaster

and their execution of roofing using clay roof tiles is extraordinary and unmatched by any other craftsmen in the region. However, the architectural styles applied in Qaffin aren't similar to the architecture in Israeli project cities and settlements, which most of the working force in Qaffin work in. for instance, Harish has a very repetitive architecture of grey stone building blocks, it lacks color, life, and flair.

Chapter Five

Discussion and Conclusion

5.1 Conclusion

The urban form of Qaffin has shown very distinct qualities that are most apparent through the building fabric of the town. Other elements of the urban form such as street network and block pattern, have shown little alteration with time, as streets stretched linearly they still had their original irregular arrangement and organic pattern, while the block pattern hasn't changed at all through the last century, the most prominent change which has happened to the town plan is the high rise in building pattern density, as the town plan is almost filled with buildings. The qualities and types of those two elements are very similar to many other towns and villages in Palestine and cannot be described either as different or unique. While the building fabric has been more prone to reflect the changes that Qaffin town has witnessed. The building fabric has changed through the last century, introducing more building types, yet the most interesting and unprecedented change is the change in form and architecture characteristics of buildings.

The factors of which have brought the change to the urban form of Qaffin, are stirred by the unstable political situation of Palestine. The illegal occupation practices against Qaffin town, like many Palestinian towns and villages, by confiscating large tracts of land, and controlling water resources, have besieged the agricultural life and introduced new economic dynamics to Qaffin. The largest section of Qaffin working force, work as construction men or other construction-related professions in 1948 occupied Palestine. Which have contributed to the transformation in urban form in several ways. First, the

advancement in economic conditions of the people of Qaffin has given people the affordability of constructing new buildings and thus affected the rate of urban expansion. Second, the construction workers' experience with different materials and different construction techniques, along with being exposed to other architectural styles used in neighboring 1948 occupied Palestinian towns, has been carried home and applied in the building fabric of Qaffin. Colors, forms, scale, and the general image of 1948 occupied towns are similar except the fact that towns behind the 1948 line are larger in size which gives a general glimpse to the predictable size of towns in the West Bank have they not been subjected to the Israeli occupation practices of limiting urban growth.

This found similarities between Palestinian towns in the West Bank and 1948 occupied Palestine shows that despite the isolation, separation, and fragmentation policies the Israeli occupation has been practicing against Palestinian communities. Palestinian towns still share similar qualities of their urban space, and they still chose to have the same should, general character and to be inspired by each other. This found similarities between Palestinian towns in the West Bank and 1948 occupied Palestine shows that despite the isolation, separation, and fragmentation policies the Israeli occupation has been practicing against Palestinian communities. Palestinian towns still share similar qualities of their urban space, and they still chose to have the same general character and to be inspired by each other.

The changed building fabric has introduced new building types such as, Veranda house which appeared through the Jordanian period, Duplex house, a semi-attached house that appeared through the Israeli period, and villas, cottages, multi-story apartment buildings, and other types. The form has morphed into complex compositions, with different shapes of roof tiling, architectural ornamentations, and the appearance of stark and vivid colors.

The colors can be considered the most important aspect which sets the difference between Qaffin's urban form and other towns of the West Bank. The locals of Qaffin by choosing this vivid and vibrant palate they are intentionally creating an iconic architectural style that distinguishes the urban form of Qaffin from that of other towns in the West Bank.

5.2 Recommendations

- The thesis describes the urban morphology of northern rural-urban form through Qaffin town, which is an attempt at describing and documenting the urban morphology of the rural Palestinian landscape. It has been explained previously how Qaffin town was physically fragmented and dissected into different zones and thus have developed in different directions according to different changing dynamics. There is little to no literature that tackles the Palestinian town's transformation of form, so this thesis highly encourages researchers and academics interested in the Palestinian rural landscape to invest more in documenting this change and provide further analysis.
- Through this thesis some evidence have been presented on how the Israeli Occupation controls the Urban growth and can direct the development of urban form not only through political practices but also through the dominant control over those towns economy.
- This thesis also provides information and documentation on the urban development of Area B and C of the West Bank, which lays mostly under Israeli occupation control, and therefore suffers from heavy planning schemes that serve the occupation and is meant to annex and eliminate those towns and villages from the Palestinian scape, and so I recommend researchers and academics to proceed with documenting and producing more literature on Area B and C of the West Bank.

- Through this thesis analysis of Qaffin's urban form, similarities have been pointed out between the architecture of Qaffin and that of Palestinian towns in 1948 occupied Palestine. This comparison could not be carried out and researched through this thesis, but it can provide a new perspective on how the Palestinian towns urban form changes and transforms in respect to each other under the severe political circumstances which fragments and isolates towns and cities from each other. So it's highly recommended that future researches should look this point and study it further.
- The case of Qaffin has been chosen to highlight the uniqueness of northern borderline towns of the West Bank's urban form. It hints at a difference from other towns through the West Bank, due to the physical fragmentation of the Palestinian landscape, town's urban form has transformed in separate and different ways. This theory is again short of proof and research, and thus its recommended that the Palestinian town's urban form should be studied more specifically in reference to geographic regions, and not be included in one whole form that encompasses the whole scenery.
- The situation of Qaffin town has proven that there is not enough effort being produced by the Palestinian authority ministries, such as the ministry of local government, the Ministry of Agriculture or the Ministry of Economy, on protecting Palestinian towns, and improving their life situation, so this is a call to the government to provide more focus and effort into such areas.
- The designed Master plan of Qaffin lacks a properly designed street network. And so, its recommended to provide a street network for the town that serves all its buildings and future constructions.
- The local taste of Qaffin people shows a clear preference for colored paint finishes over Stone Finish. The Municipality of Qaffin could embrace such preference through

the building regulations, and direct people towards using colored paint to distinguish the architectural identity of Qaffin.

- Urban expansion in Area C, lacks infrastructure and many services. Its recommended that the Municipality should provide those services and a proper infrastructure to such areas, as an act of claiming the right of those lands.

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جامعة النجاح الوطنية
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تغير المورفولوجيا الحضرية: قفين كحالة دراسية، شمال الضفة الغربية

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أمنة دحلية

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د. زهراء زواوي
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قدمت هذه الأطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في الهندسة المعمارية
بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس، فلسطين.

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ب

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الملخص

تتناول الأطروحة التحول الأخير في الشكل الحضري في البلديات الشمالية للضفة الغربية ، وبالتحديد تلك التي تقع على حدود عام 1967. وتتبع التغيير الذي طرأ على الشكل الحضري لهذه البلديات منذ عام 1948 وحتى عام 2020. لقد أدى الصراع السياسي المكثف الذي ابتليت به البلاد خلال القرن الماضي إلى تغيير الوضع الاقتصادي والاجتماعي لمثل هذه المناطق. كان هذا التغيير الخاص في الديناميكيات هو العامل المؤثر في البيئة الحضرية الجديدة في هذه المدينة ، والتي تغيرت من أصولها الريفية الأصلية ، إلى بلدات وقرى مجزأة ذات شكل حضري كثيف ومطوق ، فهي تنمو داخل مناطق محصورة ومحدودة.

بلدة قفين ، الواقعة في محافظة طولكرم على خط 1967 ، لها شكل حضري مميز وفريد للغاية ، وتم اختيارها كحالة دراسية للأطروحة. يركز تحليل الحالة الدراسية على تحول التنمية الحضرية والشكل الحضري لقفين وتتبع وتحديد ديناميكيات التغيير بين 1948-2020. من خلال شرح تحول الأحداث السياسية التي شهدتها القرية ، وتحولات العوامل الاقتصادية والاجتماعية في قفين وكيف ساهم ذلك في التشكل الحضري. يتم تحقيق ذلك من خلال إجراء كل من الأساليب الكمية والنوعية وجمع البيانات من أجل البناء النظري والأرشفة والتحليل التاريخي من خلال مراجعة الأدبيات والبحث الميداني والمقابلات شبه المبنية والتقاط الصور والملاحظات حول الصفات المميزة لهذه البلدة وتحليل الخرائط و الصور .

ج

أظهر التحليل كيف أدى الاحتلال الاسرائيلي والتجزئة الحدودية للبلدة خلال السنوات الماضية إلى القضاء على الهوية الزراعية لقفين ، وفرض التغيير في الحياة المهنية للمدينة ، ودفع الناس إلى سوق العمل. أدى هذا التغيير في الحياة الاقتصادية إلى ربط البلدة بالبلدات والمدن الفلسطينية المحتلة المجاورة عام 1948، مما أثر على الحياة الاجتماعية في قفين وحمل معه بعض تقنيات البناء والتشييد التي تم عرضها في المباني، مما أدى إلى تغيير نمط بناء البلدة إلى أنواع فريدة.

الكلمات الدالة: التشكل الحضري، الشكل الحضري، التحول الحضري، بلدة قفين، البلدات الفلسطينية، تصنيف المباني.