Universidade do Minho
Escola de Arquitectura

Rand Askar

From Temporary to Permanente, Incremental Housing Vision for the City of Homs

Do temporário para o permanente, visão incremental da habitação para a cidade de Homs

RESEARCH VOLUME

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Dissertação de Mestrado
Ciclo de Estudos Integrados Conducentes ao
Grau de Mestre em Arquitectura
Área: Cidade e Território

Trabalho efetuado sob a orientação do
Professor Ana Luisa Rodrigues

janeiro de 2018

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Título da dissertação:

From Temporary to Permanent, Incremental Housing Vision for the City of Homs

Orientador:

Professora Doutora: Ana Luisa Rodrigues

Ano de conclusão: 2018

Universidade do Minho, 31 de janeiro de 2018

Assinatura: _____

Acknowledgment

Standing at the door steps of graduation after a long period of time filled with both hardships and joy, now I'm writing this letter as a final touch for my dissertation where I would like to reflect on the people who have supported and helped me throughout this period.

First, I would like to thank my supervisor professor Ana Luísa for her support, patience, insightful comments and guidance that helped me to successfully complete and improve this research. And warm thanks to Professor Pedro Baía who helped me in this work to become mine and steered me in the right direction to where I stand now. I would also like to express my sincere thanks the Global Platform for Syrian Students and specially doctor Helena Barroco for giving me this great opportunity to complete my studies and academic development.

In addition, I thank my friends in Syria and Portugal for accompanying in this journey which they filled with joy, laughter and special moments that I will never forget. Monaem, Nahed and Rose words are not enough to express my appreciation for supporting me emotionally in the ups and downs and for your positive energy that kept pushing me forward when I mostly needed.

Finally, I want to express my sincere gratitude to my parents for their wise counsel, sympathetic ear and specially my sister Rasha for always being there for me and for sharing many tough and great adventures throughout my life.

Thank you very much everyone!

Rand Askar

Abstract

FROM TEMPORARY TO PERMANENT, INCREMENTAL HOUSING VISION FOR THE CITY OF HOMS

Housing crisis is an inevitable outcome in most of post-conflict scenarios. Therefore, the reconstruction process and particularly in terms of housing is considered as an evident prerequisite in handling wars' aftermaths. By the end of a war, it is important to ensure a relief accommodation to receive the war-affected people and provide them with protection to resume their lives and responsibilities while reconstructing their permanent homes. Hence, temporary housing structures have been considered in a variety of post conflicts cases as a primary step of reconstruction process.

Since 2011 and until today, Syria has been suffering from the most devastating war in recent history, leaving millions of people displaced, dispossessed, and homeless due to the massive destruction of their homes and properties.

This research discusses the very inaugural phase of housing reconstruction in the war-torn city of Homs in Syria through arguing several temporary accommodation alternatives in order to plan a proper housing strategy to receive the returning people after the war ends. Drawing on literature review and several previous experiences around the world, coupled with analysing the regional conditions and circumstances of the city, the research examines the planning considerations and design variables of constructing such kind of lodging, along with addressing the problems of implementation within the certain context of the city.

The research proposes to set up a housing approach in Jouret al-Shayah neighbourhood in Homs, which addresses the local context and sets a prospective vision of incremental evolution within the surrounding urban context to be a part of the city development and permanent construction, while keeping in mind the insistent need of sustainability. In addition, by examining the development and transformation of the urban fabric and building typologies of the city till the war time, the proposed approach tries to regenerate some vernacular forms and values in response to modern-day demands.

Key words: post-war reconstruction, Homs-Syria, temporary accommodation, incremental housing, vernacular architecture, mat-building, sustainability.

Resumo

DO TEMPORÁRIO PARA O PERMANENTE, VISÃO INCREMENTAL DA HABITAÇÃO PARA A CIDADE DE HOMS

Uma crise habitacional é um resultado inevitável na maioria dos conflitos armados. O processo de reconstrução, particularmente no que diz respeito ao setor da habitação, é considerado uma prioridade essencial nos cenários pós-guerra. Nestes cenários é importante garantir o alojamento das pessoas afetadas, providenciando-lhes proteção e condições para que estas possam retomar as suas vidas e atividades diárias enquanto procedem à reconstrução das suas habitações permanentes. Consequentemente, os conceitos de habitação temporárias têm sido considerados, numa variedade de cenários pós-guerra, como um primeiro passo do processo de reconstrução de um país.

Desde 2011 e ainda hoje, a Síria tem sofrido uma das mais devastadoras guerras da história recente, deixando milhões de pessoas deslocadas, despossuídas e sem-abrigo devido à destruição maciça de suas casas e haveres.

Este trabalho de investigação discute uma fase inicial do processo de reconstrução de edifícios habitacionais na devastada cidade de Homs, na Síria, através da apresentação de várias alternativas de alojamento temporário com o objetivo de planear uma estratégia de habitação adequada para o acolhimento das populações deslocadas após a cessação do conflito armado. Com base na revisão da literatura, extraindo conhecimentos das várias experiências anteriores implementadas por todo o mundo complementadas com a análise das condições e circunstâncias regionais da cidade de Homs, este trabalho examina as considerações de planeamento e as variáveis do projeto de construção deste tipo de alojamentos assim como analisa os problemas de implementação atendendo às especificidades da cidade em estudo.

Este trabalho de investigação propõe a configuração de uma abordagem habitacional no bairro de Jouret al-Shayah, que aborda o contexto local e define uma visão prospetiva da evolução incremental enquadrada no contexto urbano circundante como parte do desenvolvimento da cidade e das construções permanentes tendo em mente a insistente necessidade de sustentabilidade. Adicionalmente, ao examinar o desenvolvimento, a transformação do tecido urbano e as tipologias dos edifícios da cidade que existiam antes do conflito armado, a abordagem proposta tenta regenerar algumas formas e valores vernaculares para dar resposta a necessidades habitacionais da atualidade.

Palavras chave: reconstrução pós-guerra, Homs-Syria, alojamento temporário, habitação incremental, arquitetura vernacular, mat-building, sustentabilidade.

Table of Contents

INTRODUCTION

WARS AND CONFLICTS

Many countries around the world have experienced wars and conflicts which have had plenty of material and moral disadvantages over those nations and their inhabitants. The effects of conflicts involve both social and physical aspects, since they deeply impact the social, economic and urban environment of the affected countries. Therefore, different levels of destruction, demolition, and damage are extremely obvious consequences of wars which affect a country's appearance, infrastructures, building, homes or properties.

Post conflict reconstruction demands the repair and rehabilitation of the social networks and economic infrastructures that have been disrupted by the conflict to stabilize the normalcy and well-being of the damaged communities (T. Seneviratne et al. 2011).

Conflicts, wars, and natural disasters all have a very similar aftermath, as they end up with parallel outcomes in terms of destruction and extensive physical damage over the built environment of the affected country, along with leaving large numbers of homeless and displaced people. Hence, the reconstruction process in both post conflict or post disaster scenarios in general follows almost identical strategies according to the scale and intensity of the damage and destruction. Moreover, the destruction of houses is one of the most dangerous physical outcomes of wars and disasters, since it has serious impacts on the lives of individuals and families, as it is related to the livelihood, security, privacy and stability, it also represents the social environment of community members (Barakat 2003). Thus, the reconstruction of houses has the priority among other physical structures, due to its significant role in re-establishing the social environment of the communities and retrieving their functions in order to revive the dynamic environment and development of the urban areas and cities which represent the vital pivots of the countries.

As the reconstruction and repair of damaged and demolished houses is usually a long process and may take a considerable period of time for the properties and homes to become inhabitable once again. It is necessary to provide the disadvantaged groups with temporary accommodation to resume their households' activities and normal life responsibilities during the gap time between the aftermath of a disaster or the end of a war, and the completion of the reconstruction process of the permanent houses (Félix, Branco, and Feio 2013a). Temporary housing solutions have been widely considered in many of post-disaster and post-conflict experiences through different forms, and they played significant role in gradually bringing the individuals back to their normal lives and activities while reconstructing their residences. On the other hand, temporary housing is considering as a controversial issue, and has been extremely criticized, due to different problems and factors of inadequacy.

SYRIA, A HUMANITARIAN SCOPE

Syria has been suffering from an on-going horrific internal conflict and destructive war that has stretched over the last 6 years and has affected it and its people both materially and non-materially. Syria is an Arabic Middle Eastern country located in southwestern Asia that occupies an area of 185,180 square kilometers, at the eastern side of the Mediterranean Sea; it is bordered by Turkey on the north, Palestine and Lebanon on the west, Iraq on the east, and Jordan on the south.

Due to the ongoing conflict in Syria that began in march 2011, a vast number of Syrian people have fled their homes and communities running for their lives, and by 2017, statistics have shown that over half of the population which is estimated about 22 million people, has been displaced involuntarily, and many of them have been experienced the displacement various times ("Humanitarian Needs Overview, Syrian Arab Republic" 2018).

According to international reports, the conflict in Syria has been considered as the world's largest humanitarian crisis since the Second World War. As the destruction is massive all over the country and especially in the cities of Aleppo, Homs and other urban and rural areas, there are urgent and acute humanitarian needs for basic services, facilities, infrastructures and shelters to provide protection and livelihood for the displaced people ("Syria Crisis" 2018).

According to the UNOCHA, the estimated number of IDPs is 6.1 million people, and some other 2.98 million live in besieged and unreachable areas. The recent studies show that over 12.6 million people have fled their homes to escape the war whether inside Syria or beyond the Syrian borders. A large portion of those are elderly, women and children ("Humanitarian Needs Overview, Syrian Arab Republic" 2018). The number of refugees that the Syrian conflict has generated is now considered now the largest refugee population that resulted from a single conflict, since over 5.3 million people have fled to the neighboring countries and the wider region, and the numbers continue to increase. The bordering countries have received a large number of Syrian refugees whereas Turkey had the majority with about 3 million Syrian refugees while Lebanon hosted 1 million refugees, Jordan also received about 650 thousand refugees, as well as Iraq with 240 thousand refugees, and Egypt with other Arabic north African countries had around 150 thousand refugees ("Humanitarian Needs Overview, Syrian Arab Republic" 2018). (Fig. 3).

As the outflow of refugees continues to increase every day, many problems have emerged regarding the needs and lack of protection and relief forms in the hosting countries. Yet after six years of the ongoing conflict, short term solutions are not enough anymore, these countless numbers of refugees have increased the social tension in the host communities, where other challenges arose concerning basic needs, health care, shelters, jobs, education, and other services. However, the crisis of residing these people remains the most critical issue.

Moreover, the situation in the asylum countries differs from one place to another, but generally the conditions are quite miserable, and most of the refugee camps have poor qualities especially in the neighboring countries, and some of them have reached dangerous points in providing even the very basic needs of protection and relief. However, the only three countries that have formal refugee camps are Iraq, Jordan, and Turkey. Thus, 85% of the Syrian refugees reside in non-camp environments, with no access to adequate shelters and other facilities ("Population Profile: Syrian Refugees" 2015). (Fig. 4).

THE SCALE OF DESTRUCTION: THE CITY OF HOMS

Admittedly, the ongoing Syrian war has lasted longer than the First World War and has produced devastation worse than the Second World War. Considerable damage has affected both the public and private sectors of the country including health, education, energy, water and sanitation, agriculture, transportation, housing and other infrastructures.

The devastation has occurred in large areas in most of the Syrian provinces, and the level of destruction has been described as globally unprecedented. At least 3 million buildings have been affected including schools, homes, hospitals, places of worship, and even world heritage and culture sites.

By 2013, according to the United Nations' Economic and Social Commission for Western Asia (ESCWA), the overall image of the housing destruction proportion in Syria represents one third of the housing stock in the country, since 1.2 million houses have been destroyed or damaged.

The Damage Assessment of Syria that was conducted by the World Bank reported that housing by far is the most affected sector with 65% of the estimated damages relying on satellite imagery and social media analytics (Gobat and Kostial 2016).

As the conflict in Syria entered its seventh year, the scale of destruction multiplied and spread into larger areas, the violence has reached even the densely-populated neighborhoods, leaving thousands of people homeless. This destructive conflict brought the country many decades backward in terms of economic, social, and human development. The GDP today in Syria has fallen to less than half of what it was before the conflict began, and it is estimated to take more than two decades to retrieve the pre-conflict GDP levels in Syria even if the conflict ends (Gobat and Kostial 2016). Therefore, the post-conflict reconstruction in Syria will pose huge and constant challenges.

Homs is the largest governorate and the third largest city in Syria after Damascus and Aleppo; it occupies 125 km², and lies on a hill of approximately 508m height above

sea level in a strategic location in the middle of Syrian Arab Republic, which makes it a hub for supply routes to all the country's provinces.

Homs had been the home to a population of 800,000 people before the outbreak of the protests in the early of 2011, since then, the city of Homs has been certified as the "capital of Syrian revolution".

During the period between 2012 and 2014 Homs shocked the world with its most devastating scenes, as it became the first major city to succumb to the government's siege and destruction strategy. The city has suffered the highest levels of destruction, due to the siege and bombardment of most of its major and central neighborhoods, whereas almost two thirds of the houses in the city were destroyed and the rest were damaged busing away thousands of their residents. By 2017, the estimated number of IDPs in Homs was 355,000 people.

Satellites show horrifying aerial views of the city. Entire city blocks have been pounded into hollowed-out buildings and streets are littered with burnt-out cars and rubble. House after house, block after block, deserted streets, this is the overall scenery when horrific devastation occurs. In other words, the general view of the city can be described as post-apocalyptical. (Figs. 1- 2).

Consequently, thousands of people have been displaced from their homes and properties, since most of the city became unfit for habitation and reconstruction will be necessary on a massive scale. Estimates mark that at most only half of the original population still exists.

Inevitably, all those factors have formed a housing crisis for the yet-to-be returning people, and the need for drafting visions towards the future of the city in terms of reconstruction and recovery becomes one of the main concerns for the planners and architects.

Fig. 1: Areal map taken by a drone shows the destruction of the city of Homs. Photo available ate: https://mostlyoff.wordpress.com/2013/08/23/panorama-of-destruction-the-story-behind-the-aerial-view-of-homs/

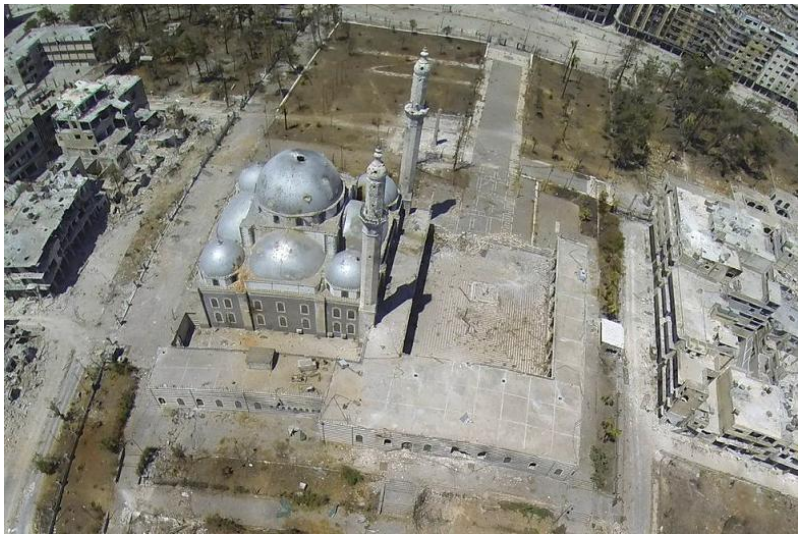


Fig. 2: The destruction of Khalid Ibn Al-Walid mosque in Homs. Photo available at: http://www.lunasafwan.com/2017/01/syrian-heritage/

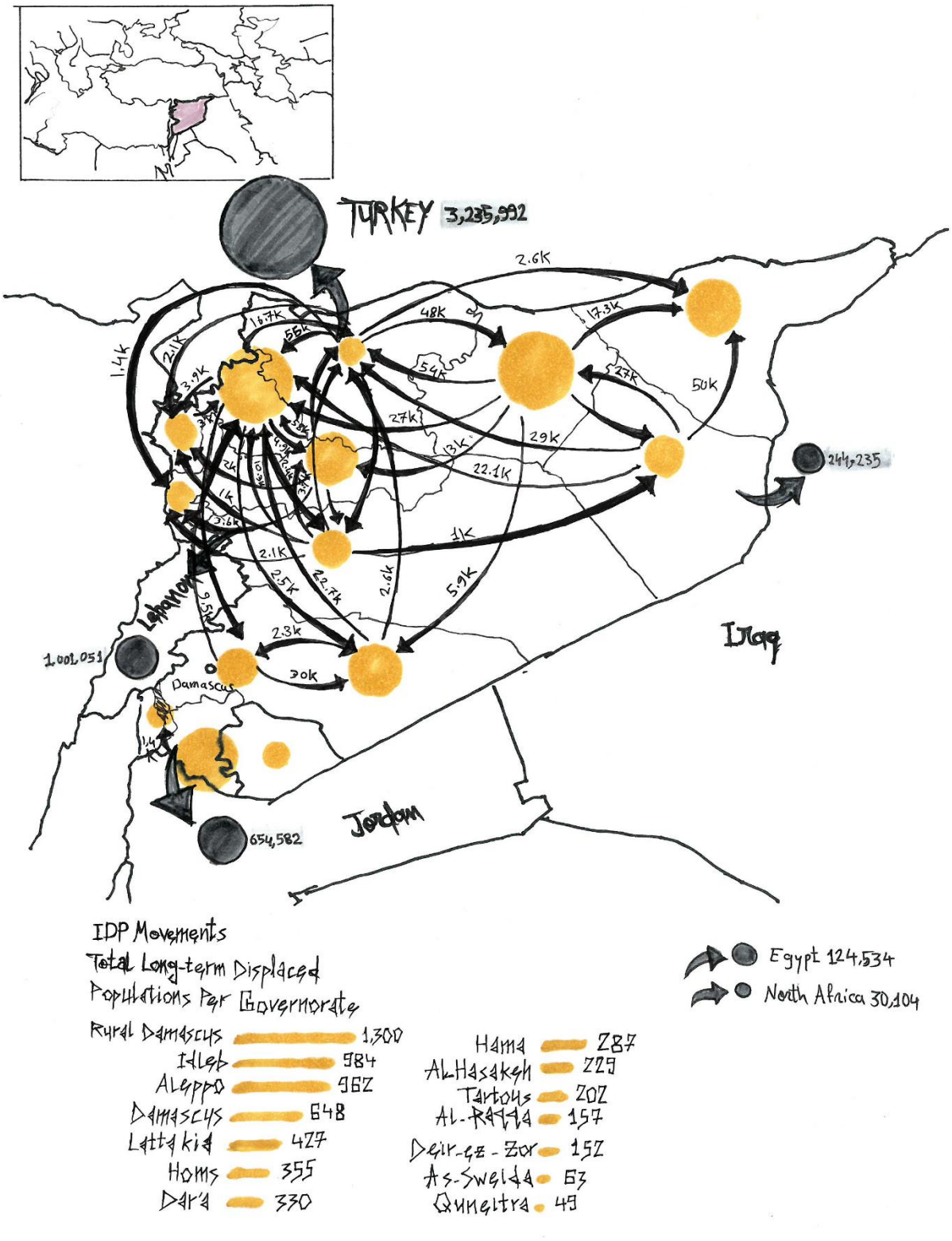


Fig. 3: Syria map, IDPs and Refugees

The city of Homs, Damage assessment

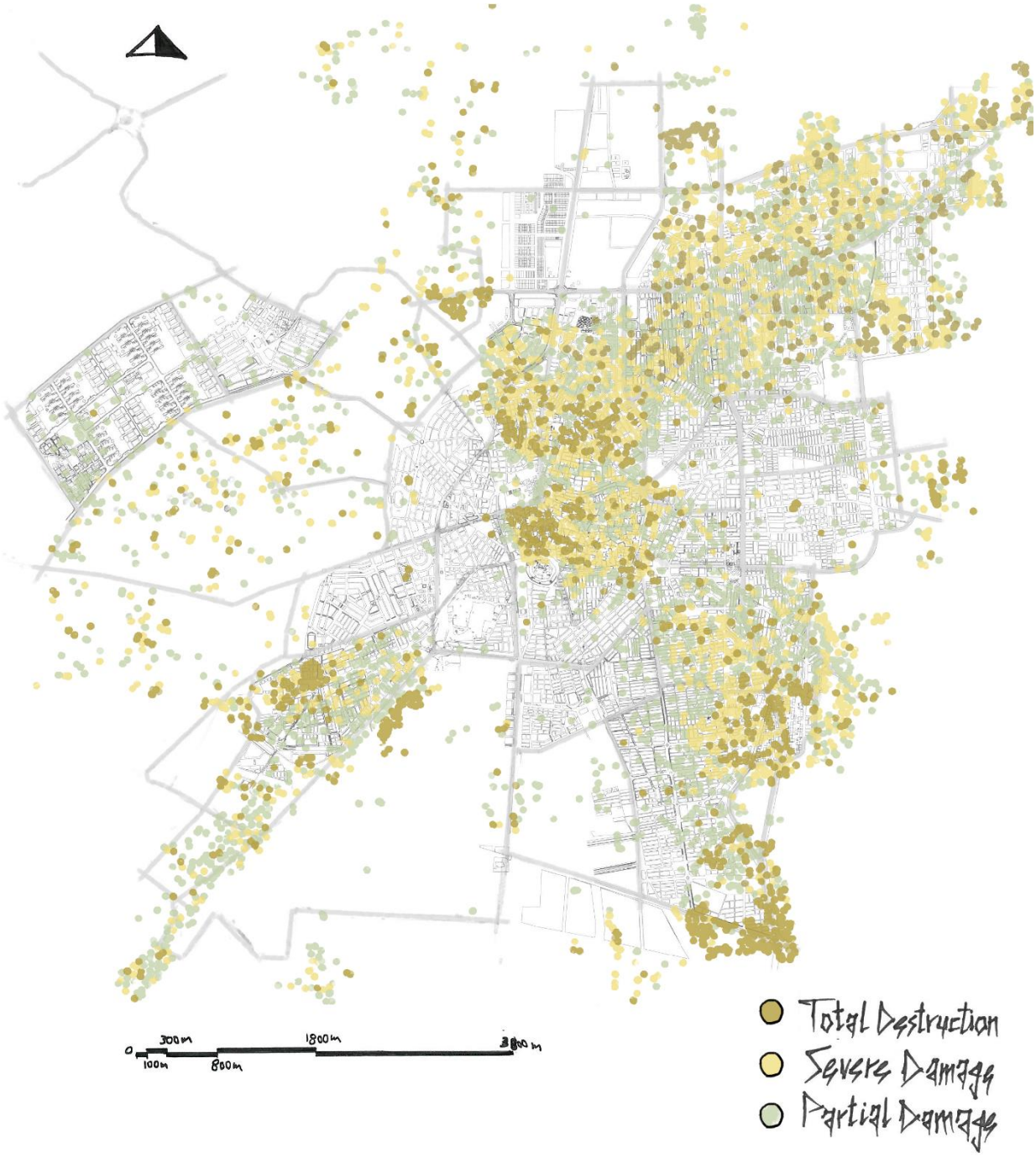


Fig. 4: The city of Homs, Damage Assessment.

Thesis objectives and questions

The overall objective of this thesis is to provide a contribution to the post-war reconstruction process in Syria that may help heal the wounds inflicted by war and handle its outcomes. Basing on literature review of different concepts and considerations concerning the principles along with important recommendations that should be followed to produce a proper housing strategy to receive the displaced people after the war ends in the city of Homs in Syria and participate in the holistic reconstruction process.

This research addresses the following questions:

- What are the planning considerations and main aspects that should be kept mind when designing for post-war reconstruction in Syria?

- What is the most proper solution to accommodate the people after their long displacement when the war ends in Syria as promptly as possible? And how we can manage this solution without consuming the limited resources of the country considering the context of conflict?

- How can this solution contribute to the permanent construction process and help the war-affected people in re-establishing their normalcy and identity?

Research Methodology

The framework of this research is based on grounded theory of a qualitative method with a descriptive and analytical approach. The selection of this approach is suitable for the nature of the research, its proposed problem, objectives and research questions. The theoretical building has done through researching and studying data and information led to the development of a conceptual architectural project in the field of post-war reconstruction.

In order to reach a thorough evaluation and critical view of the subject at hand through the use and selection of certain types of data which grounded theory allowed the use of a wide range of sources. In this research sources depended on both primary data and secondary data. Primary sources are observations from my personal experience as Homs native, data archives, government documents and census materials (maps and figures of Homs and selected neighbourhoods). While secondary data used are books, previous researches, studies and even periodicals and magazines, prominent sources include Alejandro Aravena, Alison Smithson, Cassidy Johnson, and Sultan Barakat.

The structure of the thesis

The research begins by examining the issue of housing crisis caused by the war in Syria with a brief view of some collected statistics about refugees' numbers and destruction proportions, consequently presenting the context of the city of Homs in Syria in terms of the humanitarian situation and physical destruction.

The research consists of two main parts, the first part discusses two themes, firstly it passes through a general scope of literature review explaining temporary accommodation alternatives adopted in post-war and post-disaster scenarios, followed by analyzing this in the context of the city of Homs. Next, the research presents the planning considerations and design variables to construct temporary housing project in a certain context along with defining the problems that have resulted in many failures in this field. Passing through discussing the destinies of the temporary housing and their latter use, the research moves to the second theme of the first part which explains the efficiency of adopting incremental housing strategy in the field of post-war or post disaster reconstruction. In this theme, the conditions, methodology, historical roots, and pioneers in the field of incremental architecture are presented followed by the key aspects of this strategy reflected in flexibility, durability, sustainability, its ability to organize informality, and what it holds in terms of social values and facets.

The second part of the research also consists of two sections; the first presents some practical concepts to be considered later in the second section which includes a proposal of housing approach in Jouret Al-Shayah neighborhood in Homs. The concepts in the first section start from discussing two pioneered incremental projects, the first by Filipe Balestra in India and the second by Alejandro Aravena in Chile. Then, the research discusses vernacular architecture and its importance explaining the causes of its absence from the modern scene of architecture and expressing the necessity of reviving its potential in the contemporary scene. Consequently, the research moves to present the concept of Mat-building as an architectural phenomenon alongside explaining some of its features through few examples. The last concept mentions the sustainability and circular economy interests resulted from employing the leftover building debris and good condition components and infrastructure within the reconstruction process in Syria. Finally, the second section of this part is the project proposal that begins with analyzing the context of the neighborhood and then proceeds to the conceptual drawings of the proposal.

PART I

1. POST-CONFLICT TEMPORARY ACCOMMODATION

1.1. SHELTERING AND HOUSING

Disasters and conflicts have great impacts over the urban construction and built environment of the affected nation, these impacts undermine different normal life aspects of disadvantaged people. Physically, housing is the first to be observed distinctly, as it represents the core of people's lives that provides their most basic need of shelter and enables the fulfilment of other life aspects, therefore, it has a pivotal role in establishing peace and development in any country. The dwelling carries on other meanings than its physical importance as a structure. It is worth much more than four walls and a roof, as it is the first social cell for individuals that gives them a sense of affiliation to the society they live in, and provides them with protection, privacy, dignity, and social identity (Barakat 2003; Félix, Branco, and Feio 2013a). Therefore, loss of housing means the deprivation of all those meanings and values, hence the provision of housing in the aftermath of conflicts should be as fast as possible.

The Universal Declaration of Human Rights states in article "11" of the International Covenant on Economic, Social and Cultural Rights that: "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including adequate food, clothing, and housing and to the continuous improvement of living conditions." (OHCHR 1994).

Rebuilding and repairing the demolished and damaged homes and their infrastructure usually take considerable time, thus, it is important to provide the affected people with temporary relief accommodation to allow them to resume their activities and insure their protection and privacy until moving to permanent homes.

Following a disaster or a conflict, normally, there are two main terms concerning all types which could be considered as relief temporary accommodations in these contexts, these terms are; sheltering and housing (Quarantelli, 1995; Johnson 2002). In disaster or conflict scenarios, inconsistency or misunderstanding normally occurs regarding what each term could be referred to, or when it could be executed. While "sheltering" occurs immediately following a disaster without previously high arrangements (Quarantelli, 1995; Johnson 2002), it is assumed to set the daily lives activities such as; education, cooking, domestic activities, …etc. on hold and provide the affected groups with security and very basic needs to survive, and this could be emergency shelters or temporary shelters. On the other hand, the term of "housing" imposes another meaning rather than providing the basics, as it assumes the supplementary of higher support and qualities to resume the responsibilities and daily activities of the disadvantaged groups such as; food preparation, housekeeping,

socializing, work, school and recreation (Quarantelli, 1995; Johnson 2002), and this means the provision of temporary houses.

By this meaning, the sheltering phase logically precedes housing phase in post-disaster or post-conflict reconstruction, nevertheless, mostly both phases work in a complementary frame in post-disaster and post-conflict programming and reconstruction strategies, as well as imposing various levels of challenges for the planners and responsible authorities regarding the cultural, social, economic and sustainable issues within restricted time frame.

1.2. RECONSTRUCTION PROCESS FOLLOWING A DISASTER OR CONFLICT

Losses and damage of housing have been considered as the major material impact due to disasters or conflicts (Johnson, Lizarralde, and Davidson 2006). Post-war reconstruction assumes housing rebuilding and repairing as a determinant element in post-conflict programming to re-establish the social networks, communities and infrastructures in the transitional phase of recovery to the peace state of a country.

Post-war or post-disaster reconstruction starts from the onset of the devastative action until the provision of the permanent housing solutions (Hany Abulnour 2014). The reconstruction process in terms of housing is usually confronted by tackling the prompt need to have short-term action, simultaneously whilst considering the long-term concerns of the community sustainable development (Johnson, Lizarralde, and Davidson 2006).

In this research, we draw on many other researches and historic literature concerning disaster cases, since both disasters and conflicts have almost identical devastating impacts over the affected communities, they both require similar reconstruction programming and strategies to heal the outcomes of these destructive actions. Thus, temporary accommodations during a crisis or after a disaster have many similarities (Johnson 2008).

Quarantelli has subdivided the reconstruction process in terms of re-housing following a disaster into four stages; emergency shelters, temporary shelters, temporary housing, and permanent housing (1995). We can adopt this division for post-war housing reconstruction as well, considering the war as a case of disaster with slight differences regarding the chronology of the occurrences and aftermaths for each of the cases. These stages form independent structures and they are usually followed as a sequence taking into account the timeline of each phase, as relief stages need to be promptly achieved in order to proceed with the recovery to the permanent reconstruction (Johnson, Lizarralde, and Davidson 2006). And it also relies on the vulnerabilities and

devastations resulted following each case. However, we can assume the same division of sequential stages for post-war scenarios.

Emergency shelter

Emergency shelter represents the immediate relief, which receives the displaced families during the peak of emergency directly following the destruction of their properties and often without previous preparations. This stage should occur within hours following the destructive action which imposes the displacement of the affected groups, and it can be a house of friend or family member, a public facility or gathering centers for instance. The duration of the stay in this stage is supposed to be very short (hours to few days), as there are no supportive means such as; food provision and other basic services.

Temporary shelter

Temporary shelters perform the next stage where the families move to and reside in within few days following their displacement (Johnson 2006), due to the destruction or disposition of their homes, and often without high previous preparations (Johnson 2002), this shelter can be tents, camps, a house of a friend or family member or a second property of the affected family, collective centers, etc. The duration of the stay here is expected to be short for days or weeks until higher quality solutions are provided, since there is no provision of facilities or services for long staying. Nevertheless, these shelters assume to supply the minimum level basics that meet the short-term needs of the affected people, since it is not designed for the purpose of long-term accommodation.

Temporary housing

Which is temporary as well, but it occurs for a longer term than the previous stage, since it is supplied by higher features for relatively higher qualities of life than the ones in the precedent stages, and it is expected to be provided for the affected families within weeks to few months following their displacement, thus, they would have the ability to re-practice their daily routine and resume their responsibilities and activities. This can be prefabricated house, mobile house, an apartment, winterized tent, self-built home, a house of a friend or family member, etc. The accommodation at this stage is intended to be for some months to two or three years until the completion of the reconstruction process when the families can move to their permanent homes.

Permanent housing

This stage represents the finite rebuilt home, where the affected-families eventually move into and reside permanently by the end of reconstruction process. The construction process of the permanent housing is considerably long and may take few

years, as it is related to several factors and variables, since it requires the repairing of infrastructures, and proceeding with the reconstruction process taking into consideration the distinct proportions and levels of damage in each zone.

In some cases, when permanent houses have not been totally destroyed, the provision of this stage implies the renovation and maintenance of the original houses. This stage is normally directed and funded by governments, foreign governments, banks, and non-governmental organizations NGOs.

The construction of permanent housing normally runs simultaneously while the people reside in temporary accommodation alternatives. In many recent cases, the permanent housing stage has been incorporated together with the other precedent reconstruction stages and resulted from the gradual evolution and upgrades of the earlier housing phases which are concepted inherently to end up by producing permanent structures.

Drawing on these historical cases, the sequence of stages of providing shelters, temporary housing, and permanent housing by Quarantelli is the theoretical, typical model that is followed in post-disaster or post-conflict scenarios. However, it is not always achieved (Johnson,Llizarralde, Davidson, 2004), for example, sometimes one of the phases of emergency shelters, temporary shelters or temporary housing could be skipped or undermined or they could be combined in one integral process (Hany Abulnour 2014). This normally happens according to the specific circumstances and arrangements of each case that differs along the timeline and succession of the destructive events of a disaster or war and their aftermaths. It also depends on the funding sources, and this could create a further dimension in conflicts' cases, where different variables impose different values and strategies. Moreover, in other cases, the borderlines which define each of the sequential stages could be blurred attributing to the conditions and specifications of each case, and particularly after the release of advanced types of housing with the rise of sustainable concerns and issues, which could lead to the ability to evolve from one type to another using different strategies and building technologies.

For the Syrian conflict case, it is different, mainly because of the vast numbers of displaced people during 6 years of the ongoing conflict. This has had different scenarios and impacts in each of the Syrian cities according to changes in the circumstances in some zones and the rise of the violent actions in others. Consequently, it became almost impossible to define an overall scenario to receive the flows of displaced people over the time and from various Syrian cities and sites whether inside the country or in the neighboring and asylum countries.

Post-war/Post-disaster reconstruction, Timeline of stages

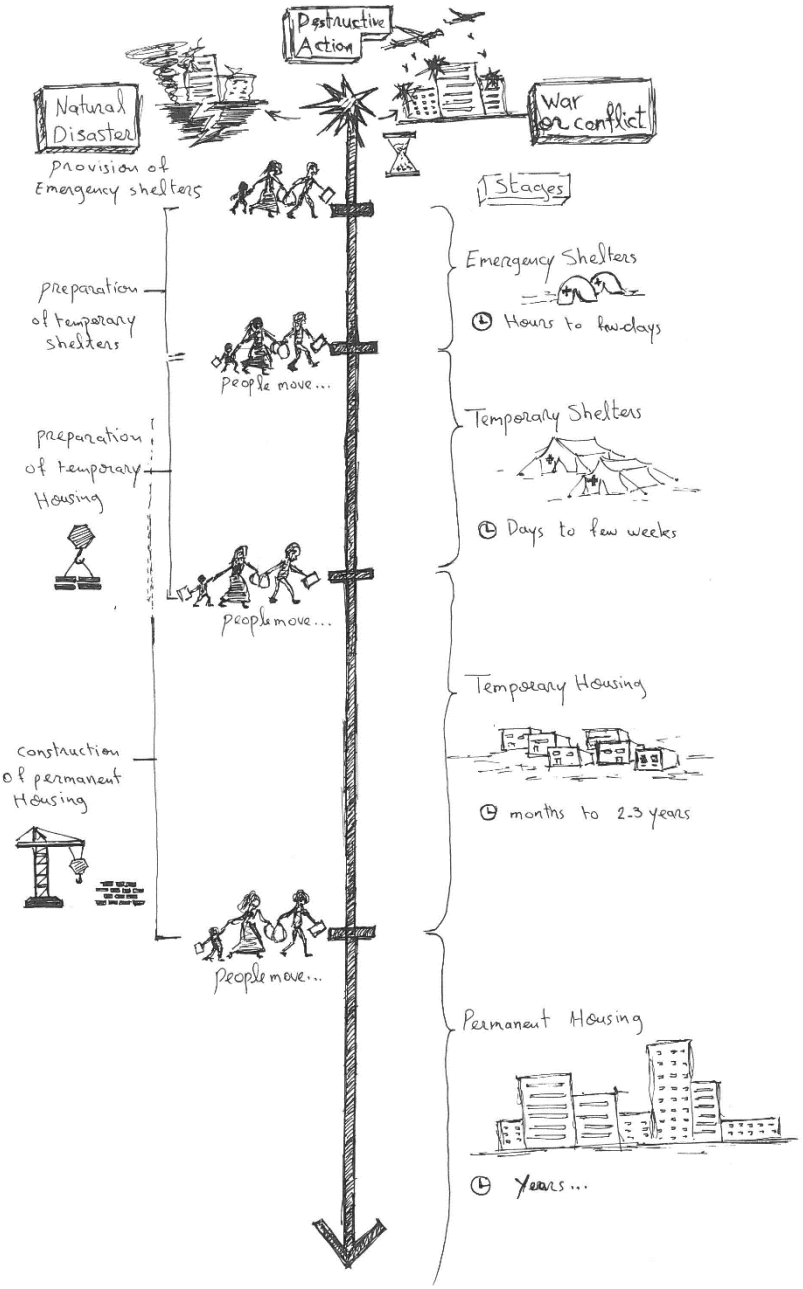


Fig. 5: Timeline of post-war or post-disaster stages.

1.3. TEMPORARY ACCOMMODATION ALTERNATIVES

The term "temporary accommodation" refers to all the types of lodgings whether shelters or houses that the people could reside in temporarily for interim period of time throughout their displacement till moving to their permanent housing (Johnson 2002). These types could be referred to as dwellings that incubate disaster or war-affected people departing from their displacement, during their transitional living until moving to their permanent houses.

For Johnson, it was important to distinguish between both terms of "temporary accommodation" and "temporary housing" (2002), as temporary housing forms a single face of temporary accommodation faces, which includes beside temporary housing, the other types of emergency and temporary shelters' stages as well according to Quarantelli sequential stages concerning post-disasters and post-conflict reconstruction scenarios. These temporary accommodation forms could be; mobile homes, self-built shelters, paper shelters, winterized tents, and other types of structures which have not been intentionally built for this purpose for example; collective centers in public buildings like schools or sports' halls, warehouses, unfinished buildings, community facilities… etc... however, these types normally receive the IDPs (Mooney 2009). (Figs. 6- 13).

Fig. 6: FEMA mobile homes for DISASTER HOUSING. Photo available at: https://timoc.org/8-best-photo-of-fema-mobile-homes-ideas/fema-disaster-housing-manufactured-homes-instead-park-models.

Fig. 7: Paper Emergency Shelter for Haiti by Shigeru Ban, 2010, Port-au-Prince, Haiti. Source: Shigeru Ban Architects.

Fig. 8: Self-built shelters in Somalia, based on the traditional 'Buul'. In cities, they are built using recycled fabric, cardboard and tin cans. Photo by: Joseph Ashmore.

Fig. 9: Winterised tent, 2009, Afghanistan. Photo by: Shaun Scales. Source: (Ashmore a nd Treherne 2013, 2:29).

Fig. 10: Emergency shelter following a flood in Burkina Faso, 2009. Source: (Ashmore and Treherne 2013, 2:35).

Fig. 11: Refugees' collective center in schools, Serbia. Source: UNHCR / F. Del Mundo, Serbia, 1995.

Fig. 12: Unfinished building inhabited by Syrian refugees, Duhok city, Kurdistan Region of Iraq. This type of skeleton poses a real challenge in terms of ensuring safety and security. Photo by: Wan Sophonpanich. Source: (IFRC, UN-HABITAT, and UNHCR 2014, 30).

Fig. 13: Syrian refugees residing unfinished building in Lebanon, 2013. Source: Shawn Baldwin/UNHCR.

The forms of temporary accommodations vary according to the context, for instance, in some cases there might be vacant buildings that could receive the affected people and perform as immediate relief and could form a suitable temporary housing for them (Davis 1978; UNDRO 1982; Gilbert, 2001; Johnson, Lizarralde, and Davidson 2006)

However, regardless to the chosen type of temporary accommodation, it should provide adequate life standards for the inhabitants and protect them from risks that may threaten their stability until a permanent housing solution is found (Mooney 2009).

Furthermore, there should be an awareness of the number of the people seeking temporary accommodation and how long they are needed for. These act as important variables in defining which temporary accommodation alternative is best suited to each case as the longer the temporary accommodation is needed for, the more durable alternative is recommended.

The phase of providing temporary accommodation dwellings runs simultaneously while conducting the strategies and plans for the permanent reconstruction and the recovery proceedings of the outcomes of disasters or wars (Hany Abulnour 2014).

Generally, temporary accommodation issues are conducted and directed by governmental authorities, NGOs, humanitarian agencies, banks, and other aid organizations (Johnson 2009), which act in response to the displacement and lodging crisis of a disaster or conflict-affected people. These authorities support the affected people following a disaster or a war departing from the early stage of displacement by facilitating the accessibility to relief shelters, and they usually assume the provision of tents or kits for basic shelter materials and tools. Some of these tents are designed to last for considerably longer periods up to two years.

In the following part of the research, we will discuss each of the temporary accommodation alternatives; shelters and temporary housing in order to gain a better understanding of each one to be considered when defining our project.

Sheltering alternative

As we mentioned before, when talking about sheltering, it means there is no high preparations which put the routine life activities on hold, since it is supposed to receive the affected group for a brief time not exceeding few weeks. However, their life span and resistance rely on the type of the shelters and their qualities.

Sheltering stages and options occur immediately after the disaster or sudden displacement due to devastating events. In the case of wars for example, their role extends until the provision of a higher quality temporary or permanent housing

solution (Hany Abulnour 2014), this may range between few days to few weeks or even months.

Hence, shelter designs should be subjected to a balance of factors pertaining to the cost, lifespan and durability, timeliness, resistance and safety (IFRC 2013). Additionally, they should not exceed the acceptable level of risk concerning the structural perspective as these shelters are supposed to protect their residents and not threaten their lives. However, in plenty of cases, shelters are built by the local and affected people themselves. (Fig. 14).

Fig. 14: Owner-built house in Sri Lanka, 2003. Source: (Bauer 2003, 19).

In some sheltering cases, when the accommodation lasts longer than intended with substandard qualities, the staying in these shelters would probably produce bad impacts over the health conditions and livelihood of their residents. (Fig. 15).

Fig. 15: Poor quality shelter characteristics in Fiji following Tropical Cyclone Evan 2012. Source: Habitat for Humanity Fiji.

Likewise, the displaced Syrian population has been staying in sheltering camps throughout the war time until now within the country or in bordering countries, and most of these shelters have poor qualities, since they were not well-prepared and qualified to receive a vast number people for a prolonged time. This happened because there were unexpected circumstances, the matter which make it rather difficult to anticipate a end time of the war. As a result, the flow of displaced people has extremely increased with no sufficient capacities. (Figs. 16- 17).

Fig. 16: refugee camp in Aleppo, Syria. Heavy rainfall has waterlogged much of the camp causing even more damage to the families' few personal belongings. Photo available at: http://www.dailymail.co.uk/news/article-2887019/Chilling-images-life-Syrian-refugee-camp-devastating-impact-bloody-wars-ravaged-country-four-years.html

Fig. 17: Syrian refugees eat their lunch outside their tents at a refugee camp in the eastern Lebanese border town of Arsal, Lebanon. Photo by: Bilal Hussein. Photo available at: http://www.humanosphere.org/basics/2014/01/syrian-refugees-lack-access-information-news/#prettyPhoto

In responding to post-conflicts and post-disasters' housing crisis, some other terminologies have emerged in relation to temporary accommodation alternatives, and under the categorization of shelters, these terms express other advanced types of sheltering that have been adapted in different contexts, such as; transitional shelters, prefabricated shelters, winterized shelters, core shelters, one room shelters, progressive shelters, and others.

These advanced shelters' types demonstrate indications of approaches rather than phases of response (IFRC 2013), however, what makes a shelter transitional, progressive or any other type is not only the design itself, but more of the context in which it is constructed in (IFRC 2013).

However, these terminologies pertaining advanced shelters make shelters transcend their definition concerning meeting the very basic needs of their inhabitants to have a wider perspective which assumes the resumption of daily life activities attributing to the higher features and qualities they offer in comparing with the traditional shelters, the matter which makes these advanced types more durable and resistant.

The following brief definitions help in classify the shelters types and categorize them under some terminologies:

- **T shelters** abbreviated one of two types either temporary shelters or transitional shelters, these shelters are designed mainly to be relocated or reused in the future.
- **Temporary shelters** are the ones which present prompt solutions that emphasize the rapidity and expenses reduction primarily, therefore, they probably have a relatively finite life span. These shelters are the normal traditional shelters that are provided in post-disasters or wars scenarios. (Fig. 18).
- **Transitional shelters** are designed to provide the basic needs to the residents and have the ability to be upgraded according to their capacities into more durable status, these shelters can also be relocated or moved to other permanent sites, therefore they could form an answer to some issues concerning land rights. (Fig. 19).
- **Progressive shelters** are mainly designed in a way that allows them to be expanded or upgraded by time in order to be transferred into more permanent status, as the units have the capacities of integrated structures which allows for a future transformation since the basic structure is existent.
- **Core shelters** or **one room shelters** are designed intentionally to become permanent, since each unit represents a part of a home that could be expanded by the habitant himself according to his own resources, by this meaning the core shelter forms a partial or uncompleted home that was found purposely to

house disaster affected people and provide them with the basic needs and safety to get by themselves by providing one or two rooms which have the standards of permanent houses (IFRC 2013), these shelters could be an appropriate approach in the cases that require a speed response with limited budget. (Figs. 20- 21).

Fig. 18: Temporary shelter following the earthquake in Haiti, 2010. Source: (Ashmore and Treherne 2013, 2:57).

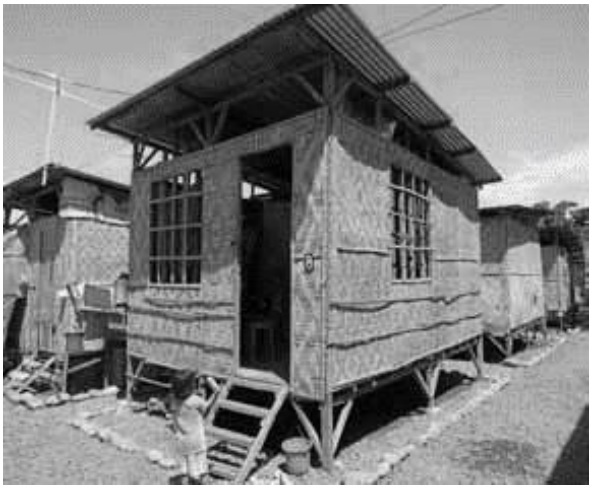


Fig. 19: Locally produced Transitional shelter following a Typhoon in Philippines, 2011. Source: (Ashmore and Treherne 2013, 2:65).

Fig. 20: One room shelter following a flood in Pakistan, 2010. Source: (Ashmore and Treherne 2013, 2:87).

Fig. 21: Core shelter following Cyclone Sidr in Bangladesh, 2007. The core shelters were built by contractors and selection of families was through a lengthy transparent process. Left shows the frame of the structure. Source: Xavier Génot, IFRC.

The shelters types which have expansion features such as; progressive and core shelters should be built in permanent sites as they are intended to contribute in permanent solutions. On the other hand, transitional shelters could be built in temporary sites as they have the ability to be transported to other sites (IFRC 2013).

These advanced types of shelters override the temporary shelters phase as they have better qualities and features which make them a combination between temporary shelters phase and temporary housing phase due to their lifespan and their higher level in responding to the needs of the affected community.

Some of these terminologies concerning advanced shelters' types overlap in some points as they have the tendency to last longer than normal temporary shelters by having better qualities or the ability to be upgraded and turning out to be another type of durable housing, for instance; the transitional shelter alternative. Nonetheless, these cases are mostly applicable in large scale disasters where the enormous impacts over the local resources and economies pose the utilization of interim solutions, for this

reason the usage of shelters has extended to have longer term types with different terminologies. (Fig. 22).

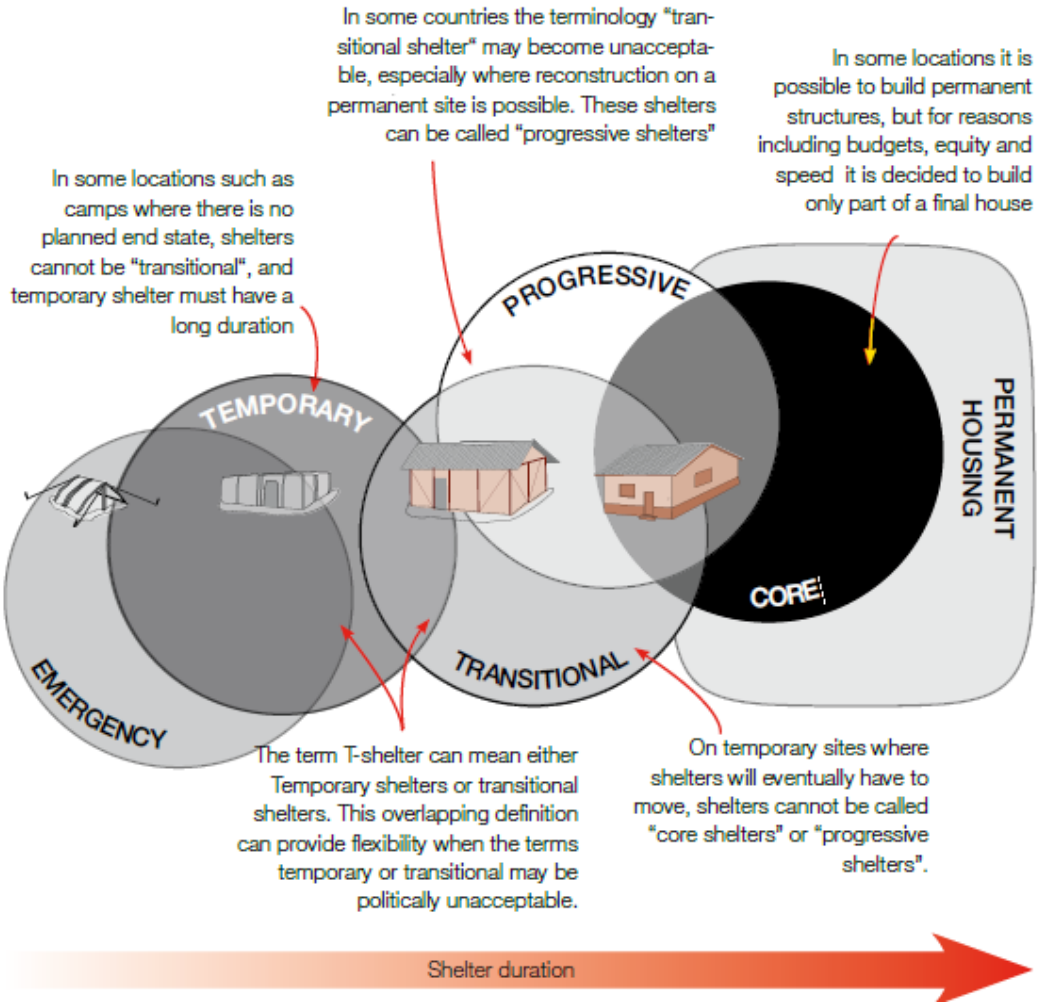


Fig. 22:Caption: Illustration of overlaps between some of the different shelter terminologies in use. Remember that individual designs might fall into many of the categories, it is the context that is important in agreeing the terminology. Source: (IFRC 2013, 2:9).

However, the shelters standards been defined and well explained by the sphere project[1] and its handbook which provides minimum standards, key actions and indicators, and guidance notes in humanitarian response in cases of disasters and conflicts.

Temporary housing alternative

Temporary housing is a temporary accommodation alternative which represents a mid to relatively long-term housing solution for war or disaster-affected people, therefore, they are considered as more durable and persistent solutions, the matter which is not

[1] The Sphere Project is a voluntary initiative that brings a wide range of humanitarian agencies together around a common aim - to improve the quality of humanitarian assistance and the accountability of humanitarian actors to their constituents, donors and affected populations. Visit: http://www.sphereproject.org/

afforded by most of the other temporary accommodation alternatives (Félix, Branco, and Feio 2013b).

The definition of temporary housing is not an easy matter (Félix, Branco, and Feio 2013b). It can be defined as structures to incubate people living in communities which have been affected by a conflict or a disaster (Hany Abulnour 2014). Or as defined by Johnson to be a part of the housing reconstruction process in post-disaster communities, or physically as a type of building serves for temporal use to receive the affected families during the reconstruction process (Johnson 2007b).

Or as defined by Quarentalli; it is a place where the affected families can reside temporarily and resume their daily life activities and household responsibilities and reestablish their social network until the permanent solution can be provided for them (1995).

In this research we will use the term of temporary dwelling to refer to the temporary accommodation in general whether it is a temporary housing or another type of temporary accommodation.

However, temporary housing forms a decisive step in post-war programming and recovery. It provides a livable environment while healing the outcomes of the war (Hany Abulnour 2014), where the disadvantaged people following a disaster or conflict could start to recover and regain some values regarding their protection, privacy, and security which they need to resume their normalcy and retain their sense of belonging. Temporary housing produces a quick response to the housing crisis following a disaster or a conflict, therefore, it forms the most important phase among the other temporary accommodations phases. Tt allows the affected people to re-establish their routine and daily activities which gives them back the sense of normalcy (Johnson, 2007a; Arslan & Cosgun, 2008) that they were accustomed to before, as the staying in this type of dwelling is relatively long and it could reach few years in some cases (Hany Abulnour 2014).

The occurrence of this type of dwelling usually ends when the permanent housing solution is provided. Nonetheless, in some cases temporary houses can be upgraded to be permanent when having high quality standards (Hany Abulnour 2014).

The importance of temporary housing derived from the elementary role it plays as an urgent response to receive the affected-people and accommodate them temporarily and simultaneously with the reconstruction and rebuilding of their finite homes. In other words, it fills the gap between the direct sheltering phase and the eventual phase of permanent housing (Johnson 2002; Johnson, Lizarralde, and Davidson 2006).

In the case of conflicts, temporary housing phase takes place when the military intervention is ending and the peace is announced, and the focus shifts towards long-term social and economic redevelopment (Anderlini and El-Bushra 2004).

Moreover, if the temporary housing was well-designed and served properly, it would boost the whole reconstruction process, as it gives the appropriate time needed for decision making concerning the planning and preparations of the permanent structures which results in producing more sustainable solutions (Johnson 2008; Félix, M. Branco, and Feio 2013; Félix, Branco, and Feio 2013b).

Ultimately, the situation in the city of Homs has started to be calmer and the violence actions and bombardment have been minimized and almost disappeared, thus, the locals have been gradually retraining their normal lives and routines and the revival works have extended to most of the city neighborhoods, subsequently, the visions of the planners and responsible authorities have been swung towards the future of the city reconstruction and the initiative programs launched to be set.

In any temporary housing proposal, there are three essentials; speed and time, quality, and cost. These essentials form the key criteria which should be verified by each single design and find a compromise to achieve a balance between these essentials to ensure the safety, feasibility, durability, quality, speed and other potential factors. In order to set a frame for all these factors and adopt a strategy that adapts the context and defines the overall constraints, limitations, and prospects, each situation has to be studied for its specificity. Since the design and construction of temporary housing is influenced by the nature of destruction, the status of the country, local conditions and circumstances, community values and culture, etc...

By this meaning, the interim solution which temporary housing represents should reflect the local context, as it should be adapted with the local construction technologies and capacities and meet the cultural preferences. All these conditions create a timing challenge with regards to the development and implementation of the proposed solution for each case. These considerations will be discussed in detail in the following parts of this chapter.

Given all this, if the temporary housing had been well-organized, it would have formed a success point and a major step for the whole reconstruction process after the conflict in Syria, as it would have been be the very first step in both the psychological and physical recoveries of the families which will allow them to restart their lives and give them proper time to simultaneously plan the future construction and achieve the sustainable development.

All this pose a question concerning how to manage the available resources in order to produce the most suitable solution for the case of Homs, and achieve the key essentials of quality, cost and speed in parallel.

Temporary housing patterns

There are several types of temporary housing. However, the term temporary housing most likely refers to prefabricated units that are mass-produced and standardized (Félix, Branco, and Feio 2013b) as they present the recognized common use of the temporary housing following disasters or wars. Nevertheless, the form of prefabs can be subdivided into two groups; ready-made units and kit supplies (Félix, M. Branco, and Feio 2013; Félix, Branco, and Feio 2013b).

- **Ready-made units:** are housing structures totally manufactured in factories and only need transportation to the site to be fixed in their locations. this type of prefabs is undesirable because of the complicated transportation system required to move this type to the location, therefore, another technique is used to facilitate the transportation process through dividing the units into smaller parts that can be rapidly assembled on site. (Fig. 23).
- **Kit supplies:** this kind of solutions is developed because of the complex transportation system needed in the previous type of prefabs. This type depends on producing small elements that form the entire unit, so it can be easily transported and assembled on site, since the elements are light, small, and easy to handle by the local people who can contribute in the construction process. (Fig. 24).

Fig. 23: Ready-made units: (a) temporary housing units ready to be transported (source: www.katrinadestruction.com), and (b) local assembly of units. Source: http://exc.ysmr.com.

Fig. 24: Kit solutions: assembly process by local community and cluster of the Paper Log Houses designed by Shigeru Ban. Source: https://archnet.org.

The solution of prefabricated units as temporary housing has several advantages, as it comes up with the ability to create numerous houses for many people within a short period of time, as well as the prefabs being long lasting, and able to blend with the contemporary city architecture (Lizarralde 2014), however, prefabs cannot be considered as the best solution because their cost is extremely high and particularly for developing countries.

Other patterns of temporary housing solutions are; timber structures, winterized tents, self-built structures, tank structures, steel frames, paper houses, mobile houses, containers (Félix, M. Branco, and Feio 2013) and others. (Figs. 25- 27).

Fig. 25: Timber Frame following earthquake in Peru 2007. Source: (IFRC 2011, 45).

Fig. 26: Paper Log Paper Log House 1995 Kobe, Japan, by Shigeru Ban. Photo by: Takanobu Sakuma.

Fig. 27: Steel Frame temporary housing following the earthquake in Haiti, 2010. Photo by: Beatriz Garlaschi for Spanish Red Cross. Source: (IFRC 2011, 57).

1.4. HOMS CASE: TEMPORARY ACCOMMODATION ANALYSIS:

During the ongoing conflict in Syria since 2011, Homs has witnessed various levels of violence during the consecutive years of the war, having occurred in most of its neighbourhoods which were fully or partially destroyed, resulting in massive devastation and loss of homes and properties. Therefore, a substantial proportion of the residents have experienced displacement once or even several times. Some have fled the city to other safer Syrian cities or even to other neighbouring or non-neighbouring countries, however, a considerable number of the displaced people have stayed within the city.

The siege to which the city succumbed between 2012 to 2014 resulted in forcibly moving away almost half of the population of the city. Most of whom were not able to find a way back home even after the end of the siege because of the massive destruction of their properties coupled with the deteriorating infrastructure, and unsafe living conditions along with the government's restrictions and legal barriers imposed

to prevent the returnees from reclaiming their properties ownership (TSI and PAX 2017).

What did the internally displaced people use as temporary accommodation in Homs during the peak times of the war?

By observation and based on displaced people stories, we can conclude that the internally displaced people in Homs have considered one or more of the following alternatives:

- Collective centres in public facilities and services' buildings, such as schools, and other governmental institutions, which have been retrofitted for housing.
- Tents in public parks or empty spaces. (This happened in the outskirt of the city)
- Unfinished buildings in relatively safer neighbourhoods.
- Homes of friends or family relatives.
- Many people who fled the country offered their homes for other displaced people to stay temporarily until the war ends.
- Low-quality self-built shelters lacking the basics of living by the lowest economic groups of the society. This option has been adopted in the outskirt of the city.
- Rentals.
- Other properties that the families have in safer districts such as offices, clinics, … etc. or even in other cities.

Fig. 28: Al-Rameh collective shelter, Jaramana, Syria. Source: C. ALFARAH/UNRWA (2013). Photo available at: https://www.sswm.info/category/step-sswm-humanitarian-crises/camps

Fig. 29: Refugees' collective center in Yaseen Ferjani School in Homs, Syria.

These alternatives have been considered according to the resources and economic status of each of the families. We can say that residing in governmental facilities buildings and parks has occurred during the violent peaks of the war. Thereafter, some regulations have been executed to move these families to other alternatives, providing that some of them had the ability to return to their homes when the situation calmed down in their neighbourhoods, in case these homes were not severely damaged or destroyed. Thus, some people were able to live in their damaged homes by slightly fixing some of the damage even when it was dangerous to move around, this explains the importance of the sense of housing and identity even when it comes to confront life threatening circumstances. Some people preferred to die within their homes rather than flee them for their lives. In some area the violence was not expected, therefore some families were obliged to flee their homes suddenly leaving all their belongings and memories behind. Each displaced family has resided in one of the precedent alternatives mentioned above, but their displacement has been extended longer than they intended, and this elaborates that the chronology of the sequential destructive events and violence peaks could impose arbitrary accommodation options for displaced people.

This situation of Homs along with the chronology of the actions and circumstances, have imposed different stages of accommodation which did not follow the theoretical division of housing stages by Quarantalli, giving a genuine example that the context conditions play a major role in defining the housing alternatives of a displaced population.

Recently, the situation in Homs has started to stabilize and become calmer except for some minor conflicts from time to time. Although the available liveable space has decreased, daily life succumbed to some trials to be revitalized and people have reopened small businesses to survive and get by the economic hardships that resulted in price inflammation. Simultaneously, the authorities, NGOs, and other organizations have started to twist their major concerns towards the future of the city and

reconstruction plans, thus, strategies have started to be set and determined for execution as soon as the peace agreements are announced. Some agencies like UNDP and UNHCR have launched some efforts on rehabilitation in some damaged neighbourhoods in cooperation with donor states and local authorities (TSI and PAX 2017).

Nevertheless, the question remains: where will the affected people stay when they return to their home city of Homs after the end of the war in Syria? In any case, post war reconstruction must assume the provision of temporary accommodation, since the reconstruction process of the permanent structures will require considerable time to be completed. Equally important, in order for the displaced people to return to their city, they must feel safe enough, therefore, it is important to have a mediation represented by international monitors to be deployed in the city in the early stages of reconciliation (TSI and PAX 2017).

Thinking in advance before the war end about the temporary accommodation for the yet-to-be returning people in Syria gives a wider perspective of time to plan an appropriate strategy, taking into consideration a primary assessment for all the vulnerabilities, variables, needs, and resources. Hence, a considerable amount of time could be saved between the end of the war and the start of the reconstruction process, as we could proceed to the implementation of strategy directly instead of randomly improvising the solutions and making hasty decisions when setting a reconstruction strategy that could lead to arbitrary planning (Bolton, 1998; Johnson, 2002; Johnson, Lizarralde, and Davidson 2006).

The narrative of Homs

Fig. 30: Homs, Syria - the Narrative.

1.5. TEMPORARY DWELLINGS: PROJECT MANAGEMENT AND PLANNING CONSIDERATIONS:

In regard to the natural disaster cases, the preparedness is requested in advance as the disasters could be anticipated and there should be precedent preparations and planning before the disaster occurs (Johnson 2002). Setting preparedness strategies in advance of the disaster hits could contribute in minimizing the effects of it and consequently conducting rapid actions and responses following its occurrence.

For wars and conflicts cases, there could be some differences, since the occurrence of a war or a conflict is cumulative along with the succeeded actions that carry on distinct levels of damage and destructions that may extend to different zones that could unexpectedly be concerned. This makes wars and conflicts last for a considerably longer time than natural disasters', and the end of the devastating actions is hard to be anticipated considering the differences and circumstances within each context. As a result, the preparedness in cases of wars and conflicts lies in the preparations and pre planning within the war time when the peace seems to be nearly announced, and thus one could have estimations accordingly about the consequences and outcomes to set initial plans and strategies in order to be reconsidered after ending the war, which a considerable time needed to set plans and strategies from the very beginning when launching the reconstruction process.

However, in both cases of wars and natural disasters, planning temporary accommodation program requires a defined strategy along with choosing the most appropriate solution for the target case from weighing in the possibilities and options, and being aware whether this strategy should be stable or changeable with time.

In order to be practical, we focus in this research on the war contexts as the thesis proposes an approach for post-war reconstruction, particularly concerning temporary accommodation issues in the Syrian city of Homs.

Before proceeding with the implementation of a temporary housing proposal, it is important to keep in mind the many factors regarding the local environment and target community along with the project objective, in order to define a suitable strategy for this case. An overall assessment should be conducted concerning different sides of the program by defining the community resources and capacities to find out the possibilities of temporary accommodation strategies and how it could be implemented in the recovery process (Johnson 2002), this includes by evidence providing relief accommodation, rehabilitation, reconstruction and development.

Setting a defined strategy requires achieving a kind of balance and coordination between all the mechanisms, capacities and needs in order to find the most appropriate approach for a specific disaster or conflict context. In other words, we cannot adopt a

good previous temporary housing project in certain circumstances and apply it in new cases without considering the actual context, since each case has its conditions, and finding an appropriate solution assumes the adaptation of the responsible organization's capacities to the people's needs (Chalinder 1998).

Given all the mentioned above, setting up a temporary housing plan and decision making should be subjected to some important considerations that assess all the circumstances of the concerned context. Therefore, in order to organize and profoundly understand this assessment process, we can assign the planning considerations of a temporary housing project to four overlapped main groups; organizational, technical, sustainable, regional and social considerations elaborated below:

Programming, management, and decision making

Programming temporary housing project assumes the project preparations in terms of the administrative arrangements and project management and procurement, conducted by the participant sides and stakeholders, which include all the persons, groups, organizations, and authorities contributing to the provision, design and construction of the temporary dwellings and carrying on the issues of decisions making, management and planning that are associated with these undertakings (Hany Abulnour 2014).

These management issues may include the followings:

- Arranging the land where the temporary housing is going to be set and obtaining its license.
- Defining the scale of intervention and the quantity of the required units relying on the concerned situation.
- Deciding on the type of the temporary dwelling whether it will be a shelter or temporary house (Hany Abulnour 2014).
- Setting a defined budget for the entire process according to the available resources and capacities.
- Setting a timeline for the whole program and project execution.
- Defining the financing sources and funders (Donohue 2012) as well as the responsible authorities, organizations and those representing the project providers.
- Defining the target groups that will reside in the proposed project, in other words, the users, and addressing the properties management. for instance, if the residents are going to be owners or rentals and who the housing units' tenures are.
- Conducting the coordination between the providers and the users.

- Defining the project team and participants, dividing the tasks over different levels (Hany Abulnour 2014), deciding whether it will be a participation by the local community in the process and specify the limits and possibilities of this participation, for instance; arranging the guidance for the locals that elucidates the possibilities in the process and determining their roles.
- Conducting the design, project planning and controlling the process by setting the regulations and restrictions.
- Conducting the entire process of the provision, design, and construction of the temporary dwelling until their delivery to the beneficiaries.
- Managing the resources to satisfy the priorities and urgent needs in the first place to ensure a successful recovery.

Good management implies efficiency in employing the efforts and resources in order to avoid the loss in finance and time as much as possible.

Funding: who builds?

Initiatives concerning temporary housing projects are usually conducted by local and international governments, aid agencies and non-governmental supporting organizations (NGOs), as well as some private informal self-initiatives by the local affected families. However, it can be said that temporary accommodation issues are generally subsidized by the responsible authorities and supported organizations.

The concerned authorities and organizations must assess the needs of the affected people to define the budget needed for the construction of the housing units and adopt a certain strategy of implementation along with realizing the scale of the required intervention in terms of the numbers of the units relying on the number of displaced families.

Ultimately, in Homs, several organizations and NGOs such as; NRC, UN, red cross and red crescent organization, have conducted various development projects and programs, welcoming and subsidizing any effective initiatives and contributions that could help in improving the situation and involving the community in the reconstruction and revival.

Land tenure and ownership

Land Ownership plays a vital role in determining the temporary housing strategy in order to find the most appropriate plan for a certain context (Lizallarde and Davidson, 2001; Johnson 2002). In many cases, land issues are most likely the causes of delays attributed to the time needed to obtain its agreement in coordination between the owners, funders and responsible authorities.

Land Ownership is inherently related to the selected type of temporary housing, since it differs whether the housing units are temporals, relocatable, or considered as permanent solutions for future upgrading or expansions. For instance, expandable solutions normally have problems in choosing the land as they will become permanent and thus, they need fixed land, while temporary structures have variety of solutions concerning the land issue as they can be set until deciding the finite formal solution for permanency being established.

Moreover, decision making about the land is also linked to the status of target families whether they are landowners, as they may use their land if they have a suitable space for setting up a temporary housing next to their damaged homes, otherwise, they will need another site. In case they are not, they will definitely need a site for their temporary housing structures (Johnson 2002).

However, in any case, the land selection should be agreed with the owners or the concerned authorities (Private or governmental ownership) to identify the most appropriate land within a certain context, then, these responsible authorities should assume some measures to grant a legal security concerning the land tenure in order to protect the affected groups from harassments and other prospective threats which may frustrate their stability (T. K. K. Seneviratne, Amaratunga, and Haigh 2011).

Technical considerations

These considerations assume the factors that impact the design, structure and performance of the temporary housing. These considerations undertake the following:

- Defining the housing type; whether it is going to be a detached house, prefab, …etc. considering the intended lifespan of the units.
- Deciding on the construction techniques and mechanisms taking into account the selected type of temporary housing.
- selecting structural systems and methods which insure the inhabitants' safety during the intended lifespan of the building.
- Define the scale of the entire process of temporary housing depending on the number of the units required to reside the affected people in the concerned case.
- Setting the concepts of the design according to the local standards and define the design elements, for instance; Size and shape, the area of the living space, ... etc. providing that this design should give allowances for the household responsibilities, cooking, cleaning.
- Conducting the construction process within the defined timeframe and executing the predetermined plans considering the speed needed to achieve the prescribed timing.

- Choosing the materials and design elements and arrange to get them in time whether imported or local.
- Assuming the required construction skills to achieve the proposed design and therefore, selecting the labor forces according to this and to the type of the intended temporary housing. This defines whether the locals could participate in the construction process or they have the ability to build the units on their own or what kind of assistance or support they will need.
- Planning and defining the position of the intervention within the urban context, and conducting the Coordination with the facilities, services and surrounding site, and ensuring accessibility to the community infrastructure. This coordination should assume the livelihoods, education, health and other sectors as well.
- Defining the quality of the dwellings considering the intended lifespan.

Economical and Sustainable considerations

These considerations care about the factors that impact the economic feasibility of the project and the sustainable performance of the design and define its durability.

The budget represents a vital determinant in the proposed design, since higher quality units require higher costs, and the durability of the units requires higher quality materials to present higher performance. Providing that the supporting and funding authorities define a specific budget, all the expenses and costs should be calculated in order to invest the defined budget efficiently to satisfy the priority needs of the residents in the first place.

The economic feasibility and sustainability also question the performance of the units' design and its elements over the time during the occupancy and even post-occupancy, for instance, the required costs for the maintenance or upgradation.

In this context, all the decision-making regarding materials, building techniques, choosing the site and land availability, …etc should be considered according to the defined budget, which impact the sustainable performance and the quality of the housing units and will have long term effects over the time and this contribute in defining the durability of the units. in brief words, the more durable temporary housing is, a higher budget in terms of cost or time is needed.

Sustainable concerns should also address the local conditions of the site where the units will be constructed. For instance, the impacts of the regional climate and temperatures on the temporary housing pose certain insulation techniques according to the intended lifespan. As well as, using local resources and materials will save costs needed in case the materials need to be imported (Donohue 2012). Other factors relate

to the sustainable designs for the intended lifespan which impose specific choices in terms of materials and techniques, as well as the ability of repairing the components of the units in case they were upgradable.

Social and local considerations

These considerations are the ones that pertain the features and characteristics of the target community and its cultural and social concerns and peculiarities, in addition to the local conditions of the target region.

The temporary housing strategy must address the psychological and material needs of the target community to satisfy them and insure its safety and comfort by examining the essence of the population and their habits and local customs. Construction strategies, methods, systems, and material, all should assume the social characteristics and cultural values of the affected people in order to reflect them through the design (T. K. K. Seneviratne, Amaratunga, and Haigh 2011), this includes organizing the indoor living spaces, outdoor space, relations with the surrounding environment and others as well as, considering the local standards and regulations. For instance, in middle eastern countries, the cultural, religious, and social values have a considerable influence over the housing preferences (T. K. K. Seneviratne, Amaratunga, and Haigh 2011). Also, when constructing in rural areas, people may have other local concerns, for example they may need additional spaces for their belongings and animals or their local industries (Johnson 2002).

particularly, when planning a post-war housing program, it is critical to be aware that the affected people are becoming more concerned about some values pertaining their religion, sociality, and culture along with seeking their safety and security (T. K. K. Seneviratne, Amaratunga, and Haigh 2011). Furthermore, there should be some special concerns regarding the war vulnerable groups in order to protect them and ensure their specific requirement, for example, women, children, elderlies and war victims.

When planning temporary housing strategy, we must also consider the relation between the former places where the people used to live and the proposed site of the temporary housing, and how the existence of such housing system could impact the community and the society of the target people. therefore, this strategy should be accepted by the locals comparing to the way they used to live before. In this context, it has been proven that the participation of the affected people in the process of designing and constructing has wide advantages over the success of a temporary housing project (Da Silva 2007, 26). When people contribute in formulating their own spaces, it most likely makes the temporary housing satisfying to their needs and preferences. However, this participation must be incorporated with the efforts of the government and guided by the responsible authorities.

These considerations overlap and complement each other in plenty of points and all of them should be analyzed and studied together in order to frame the whole context of a specific case. They provide a scope of the basics and general concepts and terms of the provision and implementation of temporary housing and the qualitative aspects which should be considered as a guideline that supports the contextualization that should be focused on when assuming the provision of a temporary dwelling specific case.

1.6. DESIGN FACTORS AND VARIABLES

In subjection to the previous considerations, there are some key factors and variable to be analyzed considering the previous points. These variables and factors shape the circumstances within the context of the war and inherently associated with the considerations above, in the following we outline some important variables which vary from case to case and determine the particularity of it, with some recommendations for better perceptions and sustainable practices, they must be discussed and questioned in association with the reconstruction process in order to successfully achieve the criteria of implications.

Type or quality

The type and quality of the dwellings indicates their prospected lifetime. Correspondingly, the quality indicates the physical characteristics of the dwellings.

The lifetime of temporary housing correlates the time required until permanent homes become available, and this forms a variable when determining the type of temporary housing needed during the expected period (Johnson 2002) since the less time the permanent structures need, a lower quality of temporary housing can be used.

In addition, the dwellings quality assumes the evaluation of their performance by time. This evaluation assumes how the physical structure of the dwellings comply with the design specifications. In this quest, what matters more for the residents is how efficient this project responds to their needs and satisfies their expectations (Fatoye and Odusami 2009).

Furthermore, it should be highlighted that longer-term need for support in the maintenance and repair of the dwellings is proportional to their type, which should consider the capacities of the owners to maintain or upgrade their dwellings in the future.

Timing and speediness

As we mentioned before, preparedness in disaster cases, and Preparations within the war-time in post-war cases would definitely save a considerable time and increase the

quality and efficiency of prospective decisions (Donohue 2012). If some of the organizational issues set in advance, thus the expected time could be reduced. For instance, pre- preparing the site, or obtaining the land agreement. Also, the proper coordination between the different parties and responsible authorities of providing the dwellings and the absence of conflict between them make it easier and prompt to deliver the dwellings earlier and smoother (Hany Abulnour 2014).

A synthesis of case studies shows that most likely, the set timeline of temporary housing take longer when implemented on the ground (Bolin, 1982; Dandoulaki, 1992; Johnson, 2000; Johnson 2002).

The timeline of providing temporary dwellings assumes the chronology of the Planning time plus the reconstruction time. Defining a timeline for percurrent, implementation, along with planning and setting the strategy with time constraints is important (Johnson 2002) as it simplifies the transition between the stages of reconstruction process and makes it smoother.

Successful reconstruction strategies assume to provide the temporary dwellings stages as prompt as possible to be delivered to the affected people (Hany Abulnour 2014) in order to proceed with the recovery and overcome the aftermath (Donohue 2012), this entails finding a compromise between the time, quality and cost, since the higher the quality and durability the temporary dwellings are, the higher the costs and required time will be.

Cost and expenses

The general cost should be estimated since the very beginning when setting a strategy, and we must consider that temporary dwellings are a worthy investment in relation to its lifespan (Laruelle 2005).

The project budget is defined by funders and stakeholders, and good strategies try to find a compromise between the expenses and qualities of the dwellings. For instance; the set budget should primarily satisfy the most significant needs of the occupants. The budget includes all the costs and expenses associated with dwellings and their attributes, for instance; providing connection with the urban infrastructure.

It should be noticed as well that investing too much in resources and finances may negatively affect the proceeding of the entire reconstruction process (Donohue 2012). For instance; importing materials would considerably increase the costs (Donohue 2012).

Design and construction methods

Post-war reconstruction programs must take into consideration the matters of housing design, location and construction methods and technologies (Barakath 2003). However, an appropriate design should ensure the residents to have the major facilities that they need, and which are fundamental to their health, comfort, and security (T. K. K. Seneviratne, Amaratunga, and Haigh 2011), and this also assumes the provision of other services that relate to their daily life activities (cooking, hygiene, energy, electricity, drink water, sanitation, heating, etc.).

When designing a house, the key factor of the design is the size of the household (Barakath 2003). The design entails how the layout of the housing units should perform through defining the utilization of the space within these units (Barakath 2003), likewise the division of the inner space of the housing units and the size of the internal spaces and rooms, for instance the size of the kitchen, the number of the bedrooms, the location of the lavatory, etc. The outdoor spaces should be considered as well, for example parking space, gardens, terraces, etc. These all should be precisely addressed, and particularly if there is an intention for prolonged use of the unit and future extensions and expansions. Nevertheless, all these concerns must be inherently attributed to the cultural and social habits of the residents and the regional and local concerns of the environment they live in (T. K. K. Seneviratne, Amaratunga, and Haigh 2011).

One more important consideration is that the design should demonstrate privacy, which is elementary in many societies, and it should be highly considered especially in conservative and religious communities, therefore, this privacy issue should be expressed when conducting the subdivision of the units and defining the openings to the exterior spaces and other issues.

Moreover, the construction system or technology is a very important factor. When using a traditional method, there is an opportunity for the locals to participate in the reconstruction process and this would increase the social economic value of the reconstruction strategy (Barakath 2003). Conversely, when using other techniques such as the prefabricated system, there will be a quick response to reside the homeless people but, in return there is not any beneficiary return to the local economic value, since this system is costly and needs particular proficiency to be implemented, furthermore, it may cause inconveniences in terms of the vernacularity and culture of the target community (T. K. K. Seneviratne, Amaratunga, and Haigh 2011). In this quest, we must consider that the more complex the design is, the more need of high trained cadres and high skilled labors is demanded and more time as well, and this could lead to delays and procrastination throughout the implementation and construction process.

Given all this, Temporary housing should provide safety, but not increase the risk over people's lives, this mostly happens in cases of disasters, since temporary housing considers the risk of other prospective disasters, therefore the design must assume the elimination of vulnerability of the target people and not risk their lives if the units fail and ensure their safety in facing any future dangers and hazards.

Materials

Before launching the reconstruction process, it is important to choose the materials which the temporary housing will be made of. Decisions regarding building materials should be made according to factors such as the quality of the materials which should be considered depending on the intended lifespan of the units and their prospective destiny (relocation, upgrade, demolition, sell, maintenance, … etc.) and their post-occupancy use.

These decisions should make provision for the sustainability and economic aspects as well by seeking the appropriate materials for reasonable prices, which can facilitate quick and cost-efficiency units' delivery (Johnson 2007b; Johnson 2007a). Furthermore, choosing local and common materials can reduce the costs, and save the time needed to import and transport new materials and also help the design to reflect the local and available resources

Moreover, when choosing materials, the cultural and social perspective should be considered by selecting appropriate and familiar materials that people can deal with and act efficiently along with local climate of the region (Barakath 2003). (Fig. 31).

Investments in providing higher quality materials will give the possibility to reuse them or relocate and upgrade the temporary housing into more durable housing.

Fig. 31: Temporary housing project in Haiti following Hurricane Sandy. Left: Beneficiaries chose the materials they were most familiar with for walling. Centre and Right: Model houses from Anse. Source: (IFRC, UN-HABITAT, and UNHCR 2014).

Site and Location

The location has been considered as one of the most substantial factors that might define the success or the failure of a new housing complex (T. K. K. Seneviratne, Amaratunga, and Haigh 2011). Finding appropriate location might be problematic, especially when land ownership is indefinite (Donohue 2012). Despite the fact that choosing a land is often limited, in some cases the land is more important than the design itself.

Assuming a location is related to the type of the desired dwellings and their intended lifespan. For instance, expandable solutions require further site appropriations and considerations in term of land size and occupancy, connectivity, ownership, … etc. Furthermore, choosing a site for temporary dwellings must take into account its internal characteristics and external connectivity with other locations, it means that it must be well connected to the urban area and ensure accessibility to the community hard infrastructure (water and sanitation, electricity, etc.) and also approaching the livelihood, social and economic services and soft infrastructure (schools and education places, hospitals, worship places, markets, public transportation means), (T. K. K. Seneviratne, Amaratunga, and Haigh 2011; Donohue 2012). Thus, the families will be surely provided with accessibility to all the basic facilities, which has been considered as important as the dwellings themselves or even more (El-Masri and Kellett 2001).

Planners tend to relocate and resettle the affected community (Coffey and Trigunarsyah 2012), however, studies have indicated that the affected community is usually hesitant and skeptic of relocation and new locations, where they suffer from another deprivation (Coffey and Trigunarsyah 2012). It is favourable to choose the location close to the affected area in order to maintain it and access the services (Donohue 2012), but despite that fact, it is easier to be located in the outskirt of the city (Johnson 2007b, 453). Another study confirms that temporary dwellings for the war-affected families must be placed at the urban areas, because of the accessibility matters. However, in many cases, the location of temporary housing was selected to be in the outskirt of the devastated city, and thus, people were not able to access some important infrastructures and amenities of the city or were excluded in isolated locations with poor connection with the urban settlement, which had negative impacts on their psychological and social recovery and deprived them from socio-cultural integration. This might result in rejecting the new unfamiliar environment or even abandon the new settlement, which consequently leads to the failure of project.

Furthermore, the location must take into account the residents safety, security and well-being (Donohue 2012). In natural disaster cases, the recurrence of the disaster should be considered, therefore the flashpoint must be avoided (T. K. K. Seneviratne, Amaratunga, and Haigh 2011). Moreover, health conditions of the site must be

addressed. For instance; if it was selected near an industrial area, the surrounding environment could be polluted which makes it unsuitable and threatening to the health and well-being of the residents.

Site selection

When talking about rehabilitating communities after a war and proceed with the reconstruction process, this recovery process needs to accommodate the affected people in habitable environment while running the reconstruction and here we confront two options concerning the site selection where those people may reside during the recovery process (G. Lizarralde, C. Johnson, C. Davidson, 2010):

- The first option is to place the units near the properties of the affected people within the destructive area to allow them to recover quickly and use the remnant facilities and maintain them. (Fig. 32).
- The second option is to move the families to another location in the outskirt of the city or countryside far from their past location and construct new temporal settlements this solution gives more possibilities to build due to the space. (Fig. 33).

Fig. 32: In Turkey after the 1999 earthquakes temporary shacks built by the affected families along the roadways serve as a safe sleeping place conveniently located near to the damaged family home that is used for daily living activities. Source: (Johnson 2008, 325).

Fig. 33: Views of the temporary housing settlement built in the outskirts of the cities of Adapazari and Izmit, Turkey. Source: (Johnson, Lizarralde, and Davidson 2006, 372).

The first option is favorable as it minimizes the effect of transitional living of the families and helps in re-establishing the social networks faster, but it is not always possible because of the limited space. The second option has more freedom in terms of space, but it has influences over the urban development, as it increases the size of the city by creating additional urban clusters.

However, in both options, we confront different challenges concerning the land tenure and other factors and choosing one of the options depends on the situation and the damage scale (Laruelle 2005), since every context is different, and this assumes different adaptation of the location with the response. (Fig. 34).

Site selectin options

Fig. 34: site selection options.

Climate and regional conditions

Climate is a very impressive determinant in defining the type of the dwellings, as well as their orientation, openings and ventilation system according to the weather conditions, proportion of humidity and temperatures to provide a thermal comfort to the inhabitants, and ensure a habitable internal environment that protects them from the surrounding conditions, such as; humidity, hot, rain, snow, wind, … In other words, being healthy to its inhabitants (T. K. K. Seneviratne, Amaratunga, and Haigh 2011).

Therefore, the dwellings must be appropriated to the regional conditions, which have considerable impacts over the technical features of the design, such as; structural system, materials and the resistance of the housing units in facing the extreme weather conditions, such as heavy rain, high winds, snow, … and also have effects on the layout of the dwellings such as; ceiling height, lobby areas, and providing balconies and outer spaces which impacts the internal temperatures of the units (IFRC 2013). For example, in hot climate countries, there is no great need for outdoor space, since people do not spend that much time outside.

Cultural and local concerns of the target community

The appropriateness of the design assumes the local cultural concerns and peculiarities of the target community (Johnson 2002), in order to reflect its needs and preferences. Therefore, all the design factors of the dwellings should seek and highly consider the target community perception and acceptance (el-masri and kellet 2001) and meet local living standards (Johnson 2007a; Da Silva 2007), and the relevant building codes.

Also, in some cases, the design should be adapted with the ethnic and religious habits and traditions of the target community and this may have impacts over some design features like the orientation and layouts of the units. Additionally, considering the characteristics of the vernacularity of the target urban area is essential, coupled with the traditional and local materials construction methods, and building typologies that exist in the community. Another important matter to consider in war-affected communities is paying attention to the special needs of the vulnerable groups (Hany Abulnour 2014) like physically disabled people who have some concerns regarding accessibility to the utilities and facilities in their houses (T. K. K. Seneviratne, Amaratunga, and Haigh 2011).

A key factor for successful projects is local community participation (Donohue 2012); The participation of the target community in the reconstruction process is proper approach for the target people, as they believe in the involvement and they have willingness to participate in re-planning and redesigning their own properties and appropriate election of the beneficiaries (Barakath et al. 2004). This involvement must

be conducted according to the people capacities and under the supervision of the responsible authorities which control the process according to the resources of the target people or provide them with subsidized solutions. This process should be guided and wisely controlled, since some community-based projects have had negative consequences (Félix, Branco, and Feio 2013b).

The participation of the community is highly recommended, as it gives a sense of inherent identity relevance between the new dwellings and their inhabitants (Hany Abulnour 2014). Likewise, community-based approaches are more sensitive in response to the local needs, and locals' participation may create income opportunities for them, not to mention that when inhabitants contribute in forming their dwellings and assume the maintenance, they make them more durable by including them in their built environment and produce prospective future uses for them.

Marc Auge argued that newer settlements designed by technicist, voluntarist urbanization projects often result in failure to offer "places for living" as to those produced by an older slower history (1995, 66).

The prospective Long-term effects

Decisions made regarding temporary accommodation may have long-term effects (Johnson 2002) as good momentary options may not be suitable for the long-term. The lack of strategic design of temporary dwellings could produce unsustainable outcomes and this could be problematic once the interim use of the units expires and there is no more need for them as temporary housing (Johnson 2008). Notably, people often stay in temporary dwellings longer than intended (Donohue 2012). Therefore, the dwellings may last for a longer-term use than what they were originally designed for which may lead to turning them into permanent accommodations over time (BAŞ 2011, 14). This would produce negative effects over the built environment and architectural features of the urban area and the city appearance. For instance; If the temporary dwellings were located near the city (in the outskirt of the city) and then turned into permanent, the city would be expanded through new suburbs with new business opportunities around the settlement, creating new work opportunities for the locals. Accordingly, programs must assume well-planning and be aware of the later outcomes and consequences of the temporary dwellings, which should be assessed according to economic, environmental and social aspects.

The homogeneous architectural environment and the continuity between the building, streets and squares in urban areas is a result of the connection between the architectural space and the surrounding space of urban planning environment. Thus, any disturbance in this connected relation would isolate the architectural space to be as an individual building and this would inevitably disjoint the continuity and thus disrupt the homogeneity on the urban planning environment (Relph 1976 17-18).

The chronology of the lifespan of the dwellings and their post-occupancy use or destiny should be addressed when setting programs and strategies, since poor planning results in adverse effects over time. On the other hand, Controlling the resources and assuming good preparations would reduce or prevent the occurrence of undesirable long-term impacts. Another issue to be addressed is how the temporary dwellings interact with the surrounding environment and vice versa (Johnson, Lizarralde, and Davidson 2006), and if there could be any impacts over the environment, such as the emissions caused by the use of certain materials.

These previous variables define the overall quality of the temporary dwellings (Hany Abulnour 2014) and form along with the conditions and the essence of the crisis itself (disaster/war) the whole context that express the uniqueness of the crisis. Committing the recommendations in the previous points assist in mitigating the problems and avoiding the failures of the temporary housing project.

Moreover, implying the design factors bearing in mind the design considerations and assuming durable solution and sustainable perspective would produce long-term solutions that have the ability to be a part of the permanent reconstruction.

1.7. PROBLEMS AND FAILURES

Temporary housing has been widely criticized due to problems relating to sustainable issues, social inadequacy and others (UNDRO, 1982; Barakat, 2003; Johnson, 2007a; Johnson, 2007b; Johnson, 2008; Hadafi and Fallahi, 2010), since plenty of historical cases show that a considerable part of temporary housing programs has troubles and unsuccessful results (Hidayat & Egbu, 2010; Félix, Branco, and Feio 2013b), consequently, they drop out their objectives and result in failures (Kronenburg, 2009; Barakat, 2003; Lizarralde & Davidson, 2006; Twigg, 2006; Félix, Branco, and Feio 2013b). This is usually attributed to unsustainable and inadequate strategies in relation to the design of the units themselves, or others that belong to misunderstandings regarding to occupiers' needs and misinterpretations in dealing with local conditions and resources (Félix, M. Branco, and Feio 2013; Félix, Branco, and Feio 2013b).

Still, temporary housing failures and problems occur mainly when not committing the recommended considerations that have sufficient perception of the planning and design variables which have been discussed previously in programming and executing a certain strategy within certain context. Hence, it is critical to be aware of the problems and identify the causes of failures or inadequacies of temporary housing to draw out some proposals and guidelines to avoid them or minimize their impacts.

When talking about sustainability issues, we must consider three elements; the economy, environment, and society.

Economical sustainability problems

Investing too much in building temporary dwellings can harmfully affect and risk the progress of permanent construction process and cause large waste in resources and materials (Johnson 2006; Johnson 2008) since mostly, the material will still be in good condition after the interim use in temporary housing (Johnson 2008).

In some cases, temporary dwellings cost the same as the permanent houses and have considerably shorter lifespan (Geipel, 1991). As well as in other cases, they cost even more than the permanent ones (UNDRO 1982; Hadafi & Fallahi, 2010).

Imported materials and transportation of units have extremely high costs, in addition to the expenses of the infrastructure provision to the location of the units (roads, electricity, water) and in some cases, there are the additional costs of skilled labour forces (Félix, Branco, and Feio 2013b). This way, temporary housing becomes a very expensive solution in comparison with its lifespan because it implies huge investments in units that will only be used during a brief period of time which makes the costs worthless after a short time and as a result, temporary dwellings have been considered as substantially unsustainable (Félix, Branco, and Feio 2013b; Johnson 2008).

As a result, the permanent reconstruction process will be negatively affected when investing the needed resources in temporary accommodation which forms a main cause of delays and disruption in programs (Félix, Branco, and Feio 2013b).

Generally, Lack of planning for the future prospective attitudes toward these structures or their further use can result in arbitrary decisions which lead to huge losses in virgin resources.

Environmental sustainability problems

Temporary housing is considered environmentally unsustainable because of the great amount of resources and materials required to construct the units, along with the lack of solutions for them after their usage (Félix, Branco, and Feio 2013b). Furthermore, they cause pollution, due to the removal of the units and their remnants of debris, garbage, etc. which need significant efforts to clean-up (Donohue 2012), this is attributed to the lack of disposal planning of the temporary units after usage which produces harmful effects over the environment (Félix, Branco, and Feio 2013b).

Moreover, bad qualities in temporary dwellings result in poor health which has been a prominent element that causes inadequacy of housing (Severinsen and Howden-Chapman 2014), and also has bad influences over the surrounding environment.

social sustainability and culture inadequacy problems

Temporary housing units are mostly prefabricated, imported and intended to be used throughout the world regardless of the target community and its culture, and what is suitable for the local inhabitants and their needs. The concept is usually universal or standardized neglecting the actual needs, climatic diversities, variations in cultural values and house forms, variations in family size, etc. (UNDRO, 1982), consequently prefabs clusters create an outlandish environment resulting in non-acceptance by the locals (Gulahane and Gokhale, 2012; Félix, M. Branco, and Feio 2013), since they rely on the strategy of mass-production in order to minimize the costs and provide considerable number of units in prompt time (Félix, M. Branco, and Feio 2013). This creates a cultural distance between the designers and the target community and results in inappropriate solutions that do not fit within the cultural and social context of the target community (UNDRO, 1982; Lizarralde and Davidson, 2006; Félix, M. Branco, and Feio 2013).

The urgent need for a rapid and large scaled action within unstable conditions normally creates inconvenience and arbitrary planning which produces problems of adaptability**.** (Davidson, et al., 2008).

The local acceptance is a prominent factor for the project success. Therefore, community participation in the construction program should not be underestimated, since many cases show that projects without a local component or active community involvement are most likely to fail and destroy the community cohesion as they lead to great losses in terms of historical values and cultural identity, which by time results in unfavorable psychological and social consequences and negative impacts on the overall reconstruction process (Coffey and Trigunarsyah 2012).

Another inevitably crucial factor is the location; Poor-located temporary housing could be the cause of its failure, as the target community may reject it or even abandon it, and thus, there would be a huge waste of resources and costs. Furthermore, far distant locations may be the cause of social exclusion for the affected people, since they become a kind of marginalized groups (T. Seneviratne et al. 2011), and this affects the psychological recovery of the displaced groups which should be considered, as this psychological vulnerability is emphasized during the transitional recovery after wars and housing solutions are not supposed to be an additional source of stress threatening the families stability and protection (Félix, Branco, and Feio 2013b).

However, all people have the right to achieve housing security, living in adequate physical standards with appropriate access to basic facilities and services when and where needed (Severinsen and Howden-Chapman 2014).

To sum up; project failure could be attributed to lack of, or problems with community acceptance and participation, or ignoring their socio-cultural needs, relocating communities, unplanned costs and inefficient use of funds and resources. (Coffey and Trigunarsyah 2012). (Fig. 35).

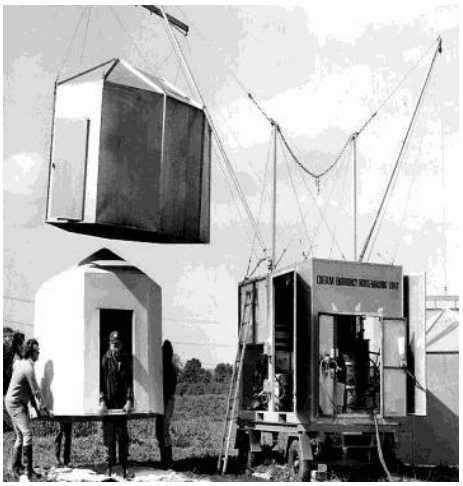


Fig. 35: Oxfam igloo housing in Turkey, 1976. Igloos were built using expatriate technicians and imported materials. Therefore, widely rejected as inappropriate to the culture and climate by the host government and beneficiaries. Source: (Bauer 2003, 14).

1.8. THE DESTINY OF TEMPORARY STRUCTURES

Most of the attention of temporary dwellings is attracted when they are in use for temporary accommodation while running the reconstruction process with no further consideration or perception of their latter use, which most likely results in arbitrary practices after their usage ends such as; destructing or dismantling them causing many losses.

These structures served as an important pillar during the reconstruction process and in order to keep having their positive role and sustainable outcomes, they should not be obsolete, problematic (Arslan 2007; Johnson 2008), or perform negatively for example turning out to be slums after ending their usage for temporary accommodation.

Successfully Sustainable temporary housing programs question the latter use of the units when the reconstruction of permanent housing process has been completed, and the affected families were moved to their permanent houses. Then the posed question is: what to do with the left units and how can they perform in responding to the community needs?

The prospective later destiny of the temporary dwellings should be questioned since the beginning of the planning and the design phase in order to provide the necessary conditions and avoid unsustainable practices that lead to great losses (Arslan & Cosgun, 2008, Johnson 2008). In such cases, the land issues play a significant role in determining the destiny of the units, also the construction techniques if there is a prospective dismantling and relocation or selling possibilities.

Although temporary housing programs are considered for interim use only, the housing crisis following a war, or a disaster make them most likely to be turned into permanent, unplanned housing for low-income families (Johnson 2008).

Demolition, relocation, selling, different usages, upgrading to be permanent, storing for future use and renting, could all be possible scenarios to the eventual end use for temporary structures.

To follow one of these scenarios we must assess the statement of the structure when they are no longer used for their original purpose for temporary accommodation and question their status and performance after their interim use and this directly impacts the decision concerning their reuse. Also, the site localization is a prominent element in defining the destiny of these structures.

1. when examining the sustainability, demolition or dismantling the units is not a sustainable solution, as it consumes virgin resources and produces waste, which negatively impacts the environment as well as producing high costs of transportation and disposal. In some cases, some parts of the units can be sold but usually with small value because of their final condition (Félix, Branco, and Feio 2013b).
2. Relocating the units or benefitting from them and their elements in constructing other structures, taking into account that there are expenses of transportation, reconstruction and compensating the missing elements. Furthermore, we must keep in mind that each time we relocate people, new challenges arise as they need to establish new life.
3. Reusing the units for other community purposes (Laruelle 2005) or rentals as an affordable solution for low-income families (Johnson 2008), this means they should be in good condition and this includes the costs of modifications. (Figs. 36- 37).
4. Storing the units for future use, this sounds sustainable for disaster cases when further disasters are predicted, but there are some costs for disassemble the units, transport, store, reassemble them again which may cost as much as getting new units (Félix, Branco, and Feio 2013b). In post-war cases, there is no predicted future use which poses more questions about the costs.

5. Selling the units, or part of them, this solution recovers some of the initial costs (Félix, Branco, and Feio 2013b), still, the units should be prefabricated in order to be sold in the future. However, it should be considered that there are the costs of transportation, and the effort and time to find buyers, which seems to be an expensive solution in plenty of cases.
6. Upgrading the units and integrate them in the permanent solution, so they could form cores for permanent houses (Laruelle 2005) and be expanded step by step to become eventually permanent houses for low income families according their resources (Johnson 2008), in this case, we must be aware of the land rights. Thus, these units serve as an affordable housing solution for those low-income families who cannot buy houses. (Figs. 38- 39). Also, some parts of the units could be recycled for new uses in the permanent construction (Laruelle 2005).
7. When governments take long time to make decisions and people stay in temporary dwellings more than initially intended, they start to have appropriations according to their own community which results in slums (Laruelle 2005) that have dangerous impacts on the urban development and built environment because of the lack of knowledge of the local community and unorganized expansions, especially in poor communities. For instance; temporary housing projects in Colombia became urban slums with problems resulted from pollution, overcrowding, violence and crimes (Johnson, Lizarralde, and Davidson 2006; Donohue 2012).

The solutions which include recycling, reusing and upgrading seem to have more sustainable outcomes (Johnson 2008) and these potential solutions after usage should be considered to the maximum level (Arslan 2007).

The later life of temporary housing should not be underrated, as after their interim use they still could form a response to other people's needs and keep providing positive outcomes and avoiding sustainability problems (Johnson 2008). (Fig. 40).

Fig. 36: In Turkey, Kiremit Ocağı settlement near Düzce town centre has become rental housing, most residents have planted gardens (left); in the UMCOR settlement, a family that rents two connected units, has taken down the partition wall and now occupies 50m2. Source: (Johnson2008, 330).

Fig. 37: In Turkey, an eight-unit building that is part of the UMCOR temporary housing settlement (left); units reused as classrooms at a school (right) after being dismantled, moved across town and reassembled. Source: (Johnson 2008, 330).

Fig. 38: in Turkey, A family of four has modified, over three years, a shipping container donated to them as a temporary house into a permanent house with the addition of extra rooms and traditional Turkish sofa (veranda). Side view of the house (left) and front view of the house and the family (right). (Johnson 2008, 331).

Fig. 39: In Turkey, A lady consolidates two paper temporary houses into a three-room dwelling with the addition of a kitchen and bathroom in the middle. View of the two units and the concrete foundations for the kitchen in 2000 (left) and inside view of kitchen built between to the two paper houses in 2004 (right). (Johnson 2008, 331).

The destinies of temporary housing structures

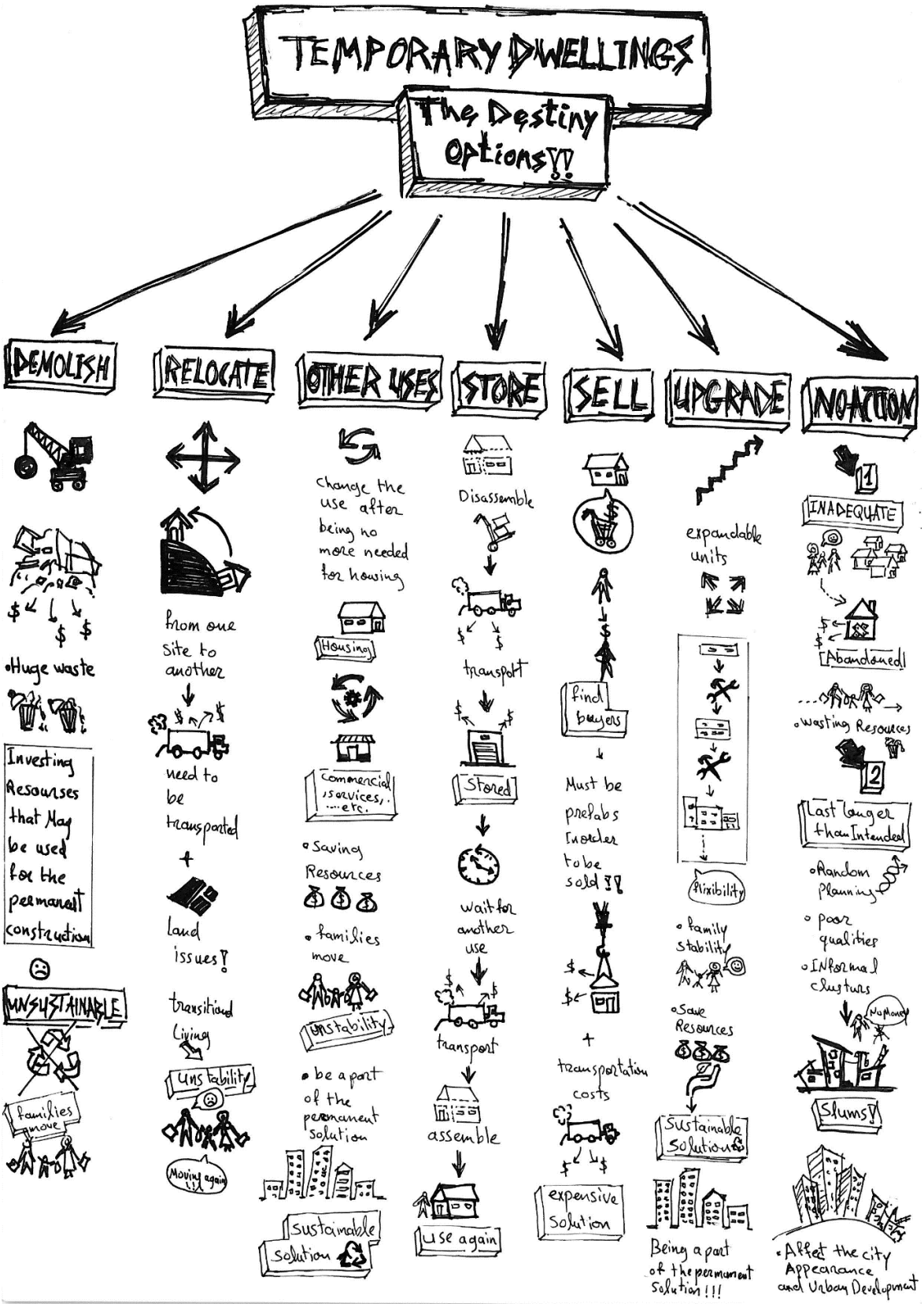


Fig. 40: The destinies of temporary housing structures.

1.9. HOMS CASE: ANALYSING CONTEXT AND CONDITIONS

Climate and regional conditions

Syria has a relatively mild climate, characterised by rainy winters and hot dry summers. The effect of the Mediterranean results in the domination of two main seasons of winter and summer, which are separated by two small transitional seasons. The rainfall is affected by the Syrian mountainous ranges and western Lebanese mountains, which divide Syria into four climatic regions.

The city of Homs is situated in the interior region, in central-western Syria. It occupies the plains of a flat land that spread over a large volcanic hill to the east of mountains region, which stands along the Mediterranean in the west. The old city of Homs was constructed on the banks of Orontes river. The climate of the city is characterised by rainy cold winters and hot dry summers accompanied with daily large differences between the minimum and maximum temperatures which sometimes reach 23 C. The interior region is characterised by high relative humidity during winter which varies from 60% to 80%, while in summer, the relative humidity is lower and varies from 20% to 50%. The winds in this region blows from the western and southwestern sides. The city of Homs is opened to a gap between the western mountains range, which made it more exposed to the western winds and air currents from the Mediterranean, the matter that gives the city a milder climate than the nearby cities and more tolerant summers than other Syrian cities.

In the very west side of the city, there were composting and sugar factories, and an oil refinery in an adjacent location to the residential area, which brings pollution by the western winds, reflected on its dirty air and dusty streets (Al-Sabouni 2016).

Homs used to have a high dependence on agriculture, because of its rich soil as it's located over a volcanic hill, which also offers a prominent building material of durable black basalt (Al-Sabouni 2016).

Social fabric

The community in Syria was united by a shared approach of life, where people used to live peacefully in tolerance with all the varieties of beliefs, religions, origins, costumes, goods, ways of life etc. (Al-Sabouni 2016).

The city of Homs used to be a home of 1,200,000 people, with social systems created a conservative and introverted community. Despite of the social hierarchy of the families based on money and power, there is no clear distinction in the way of life between the Homsis.

Homsi people are known for their generosity, kindness, shrewdness and famous sense of humour. The social tissue was essentially consisted of Muslim majority coupled with a prominent Christian presence, who both shared a harmonic and peaceful coexistence. In the recent past, the city experienced an influx of newcomers which resulted in urban expansions.

Urban fabric

The most densely populated area is "Old Homs", representing the ancient part of the city that in past times was encircled by a black stone wall for protection purposes, is penetrated by the city gates and contained the city ancient souk square and the oldest worship places in Homs (old mosques and churches). Homs citadel stands on the southwestern part of the wall. Most of the wall and its gates were demolished in the ottoman era. this part had latter extensions by the government adding random architectural features that had no relation with the traditional architecture of the city. The architectural features of "Old Homs" represent the traditional vernacular architecture reflected in the courtyard houses, which were built out of local traditional materials of black basalt stone and clay and of a similar shape and system with differences in size (Khalil, Khalabi, and Alhalabi 2016). The houses stand side by side lining the narrow alleys of the old city, which were characterized by their zigzag and irregular shape (Khalil, Khalabi, and Alhalabi 2016).

The old city was featured by its horizontal spread where the houses were built in a maximum of two stories and stand on both sides of the streets. The old city features have succumbed to many modifications that had no specific style nor relation, and many historical buildings that had historic and aesthetic importance were abandoned in miserable conditions or replaced by dead concrete blocks with no sense or meaning, while only few buildings were opted for slight preservation and restoration (Al-Sabouni 2016). These arbitrary decisions of upgrading and changing the architectural and urban features of the city were deeply influenced by the power holders who controlled the built environment in the city. Homs had plenty of qualities and features that would make it an attractive destination due to its layers of history, architecture, cultural diversity, environmental and natural features, industrial and agriculture potentials and many others. However, instead of paying these precious features the attention and potential, they were neglected and ignored in favor of the other interests of people in power. Due to the recent war, this ancient center has suffered the violence and torture actions which resulted in destroying large parts of it, wiping away layers of civilizations, architecture along with identities, memories and life style.

Other parts of the city didn't have the spirit of traditional architecture of the city. They consist of residential neighborhoods that were constructed outside the old city, considered as the modern buildings in the city. Marwa AL-Sabouni addressed the

features of this part of the city in her book "The Battle for Home the Vision of a Young Architect in Syria"; "*The rest of the city was unable to compete with the liveliness, unity and identity of the old city"*. The industrial growth of the 1950s brought imported building typologies that ignored all the past traditional ways represented in concrete blocks which basically neglect both the city character and the vernacular features of the urban environment along with the spiritual identity of the locals. These blocks are mostly characterized by different architectural styles and designs as their facades were mostly random, and even poor, which was the result of employing imported systems and typologies not fitting the architectural and urban context of the city (Khalil, Khalabi, and Alhalabi 2016). Al-Sabouni described the architectural features of this part as they range from "experimental modern" to anti-architectural nothingness (2016).

The city was surrounded by social housing clusters built in cement blocks and provided for by proper infrastructure. New expansions of Homs known as" New Homs" were constructed outside the green belt of farmlands to the west side of the city and separated by the "Orontes river", forming a relatively isolated area from the city. New Homs is generally a residential area and comprises of buildings from two to twelve stories high.

In a general look at the urban fabric in the recent past before the outbreak of the war, it could be noticed that the city consisted of several neighbourhoods that had distinguished characteristics based on social class, creed, and economic power (Al-Sabouni 2016). There was a lack of playgrounds and public spaces resulting in relatively incohesive urban planning.

Homs map- zone distribution

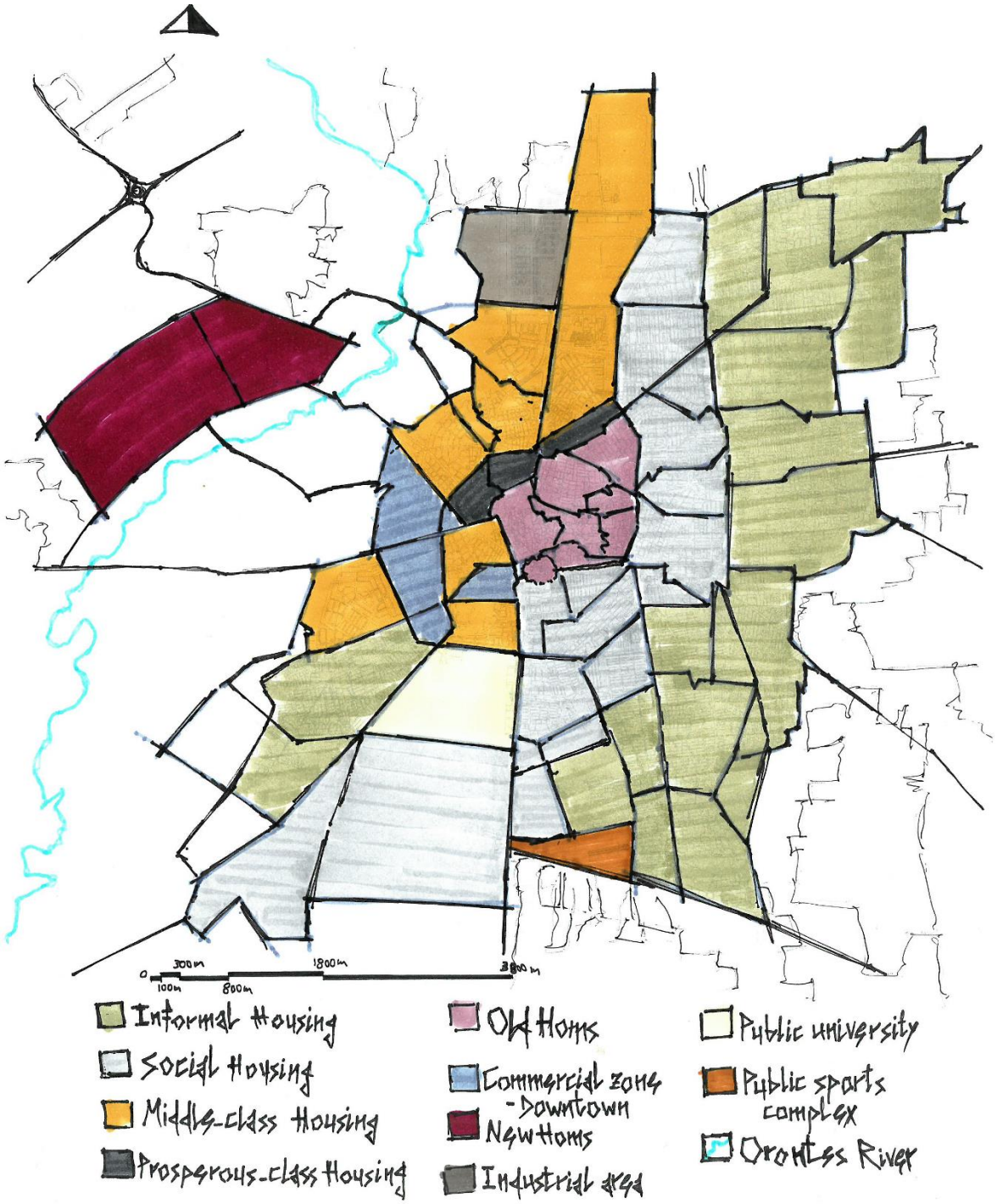
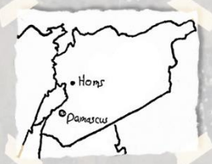


Fig. 41: Homs Map, Zone Distribution.

HOMS LANDMARKS



CITY CENTER

NEW CLOCK SQUARE

OLD CLOCK SQUARE

FAIRGROUND

NATIONAL STADIUM

AL HAMRA STREET

AL-GHOUTA STREET

HOMS CASTLE

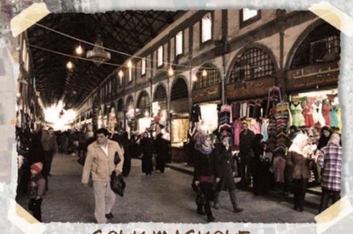
AL-DABLAN STREET

CHURCH OF SAINT ELIAN

KHALID IBN AL-WALID MOSQUE

OLD CITY QUARTER

AL-ZAHRAWI PALACE



SOUK MASKOUF

THE GREAT MOSQUE OF AL-NURI

HOMS UNIVERSITY

1 km

3 km

2. INCREMENTAL HOUSING SOLUTION

2.1. TEMPORARINESS AND TRANSITIONAL LIVING

Emergency architecture and building for the temporariness following crisis scenarios has become a phenomenon in the recent decades, posing the affected people to express the phase of transitional living, which causes plenty of questions concerning culture, stability, identity, affiliation, sense of home, and other critical issues to surface.

Temporary structures that are used in post-war and post-disaster scenarios are overwhelmingly becoming permanent in time without intention nor preparations, the reason why they become deficient is due to the lack of planning for long-term occupancy. Other destinies that the temporary structures could experience are demolishing, relocating, selling, etc…

These actions are often financially unviable and give a sense of interruption of the normalcy that the inhabitants seek, the matter that may deprive them from their psychological needs concerning their stability, affiliation, comfort, and privacy, leaving them vulnerable to the stress of transitional living. Therefore, it is very important for the displaced people to have an adequate first housing experience after their displacement to regain their stability and comfort in order to get over their trauma and move forward with their normal lives and practices.

Plenty of Post-war housing reconstruction programs have been confronted by a contradiction with the necessities of the inhabitants which had led to their dissatisfaction, which sometimes results in disapproval or even abandonment or being modified by the residents (T. K. K. Seneviratne, Amaratunga, and Haigh 2011; Barakath, 2003; Barakath *et al.*, 2004). Therefore, the needs of the target community should not be neglected but considered from the very beginning of program setting.

Recently, the issues of speed and scale have become more critical (Goethert 2010), and the rapid growth of the urban areas that could be an outcome of a disaster or a war, normally accompanied by random expansions and informal building which result in slums especially in low-income societies. This issue has been steadily gaining worldwide attention (Goethert 2010), since one third of the world's urban population is now living in slums and informal clusters, and particularly 70 percent of the housing in developing countries.

The structures and constructions of conventional instant buildings are mostly problematic considering the economical obstacles that most people face (Hasgül 2016), beside the social inadequacy issues that might not meet the actual and immediate capacities of the newly-revived communities (Goethert and Director 2010).

These slums and informality matters need effective actions more than the attentiveness or focusing on, in order to get controlled or prevented from upgrading arbitrarily.

A strategy known as incremental housing could form a key part of the solution, as it may produce a response to the immediate large-scale interventions (Goethert 2010), complying with a proactive strategy which has not been offered by traditional methods that provide instant housing construction approaches(Goethert 2010).

Incremental housing for post-disaster and post-war construction scenarios

Sometimes, to solve a problem, we may come up with another possibly more complex one. For instance, offering temporary housing for the returners to stay-in for an interim period of time, then moving them to another accommodation may solve the problem of their homelessness, but at the same time leaving them experiencing the transitional living that they have already experienced. This may cause considerable problems for them psychologically and physically, beside questioning the destiny of the temporary structures and their effect over the built environment.

Incremental housing presents a housing strategy that has been adopted in plenty of frames regarding housing crisis in situations such as; social housing, post-disasters housing, refugees housing, and other situations of emergency architecture (Kinsella 2016), Since it is capable of forming a rapid answer to the housing crisis and give a significant effect in improving the situation. Incremental strategy has been adopted in various contexts from the very initial stages of post-war and post-disaster context expressed in advanced types of shelters which have been mentioned in the previous part of the research; transitional shelters, core shelters, and progressive shelters among others.

What makes the incremental strategy potentially functional in post-war or post-disaster cases is its capacity and efficiency in dealing with displacement and instability issues that the disrupted community experience following the disasters or conflicts (Kinsella 2016). Considering its coherent relationship with the sustainable urban development, it provides a flexible and affordable solution for housing crisis (Kinsella 2016). It represents a strategy based on time-efficiency that bridges over the two phases of temporary and permanent housing and blends them in one integral process that shortens the borderline which splits them up (Kinsella 2016).

When can incremental housing occur?

For war torn or disaster struck communities, incremental constructions can be built in the sites of governmental reconstructions and places of home reparations. After the disruptive action of a disaster or war, the affected people should directly move to temporary accommodations while the government repairs or rebuilds their properties. Incremental constructions could start then in a certain framework supported by some agencies and other governmental institutions and form an answer for people homelessness by acting as temporary housing in the initial stages then evolve incrementally to be the future permanent housing. (Fig. 42).

When can incremental architecture occur?

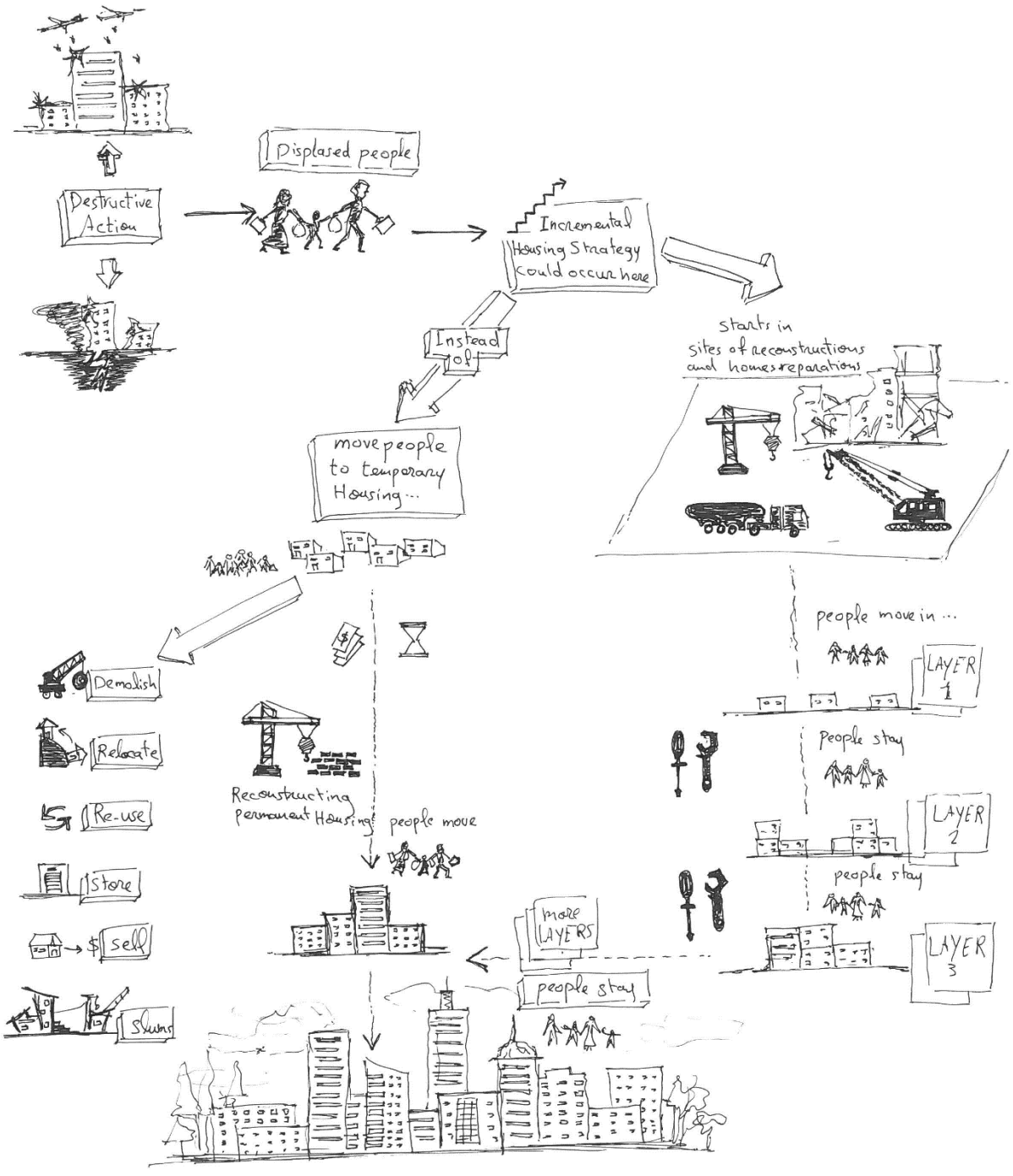


Fig. 42: when can incremental strategy occur?

2.2. INCREMENTAL HOUSING STRATEGY

Definition in terms of housing

Incremental architecture is a manner of construction which draws on the gradual evolution of the housing unit. Which could be advantageous in some cases where it is considerably complicated to construct instant structures straight away (Kinsella 2016), as they need high costs and considerable time. It could also be defined as a step-by-step process (Goethert 2010), which departs from a simple basic core and gradually evolves over time to eventually produce a final complete residence, that satisfies the residents' right to adequate housing. In other words, it provides an affordable way to promptly resettle the people and offer them the minimum basic needs and services and connect them to the urban infrastructure of the city (Goethert 2010). Other definitions go along with different titles such as; starter house, phased-development house, and owner-driven house (Goethert 2010).

Thus, incremental architecture is principally considered as a process of integration, which could be expressed by the urban development process through housing construction for people and communities (Goethert and Director 2010).

Roots and pioneers

The incremental term has been argued by several architects such as John Turner, Bernard Leupen, Alejandro Aravena, and Filipe Balestra among other precedents to formulate a housing strategy in order to find an answer for the displacement and homelessness issues (Kinsella 2016), which results from housing destruction following a disaster or a major community event such as wars or conflicts. More importantly, it addresses the instability and protection issues concerning temporary accommodations and transitioning between different types of residences that the disadvantaged people experience while constructing their permanent homes.

Inspired by the French architect and philosopher Bernard Cache, architect Leupen has discussed through "designing for the unknown" a concept called a "frame" which proposes a basic, constant structure, while at the same time has flexible, changing over time characteristics, thus having a prospective view concerning the evolution and changes of the housing spaces for the following generations. Leupen states: "*By physically making tangible my interpretation of a permanent frame system, I am able to visualize a basic form which translates to a static structure. The suggested form implies a fixed form, with room for the interior to be flexible. The frame can withstand changes over time, but can be configured in any way at initial construction. it can embody important architectural values, meaning that without damaging its essential character, can react to changes in the requirements imposed on it over time*". (2005). (Fig. 43).

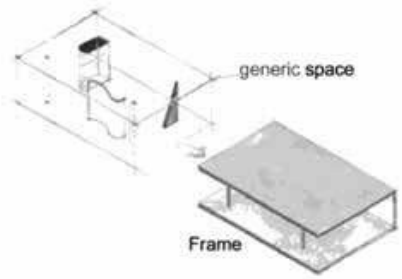


Fig. 43: Leupen, B. 2006. Principle of frame and generic space. Frame and generic space: A study into the changeable dwelling proceeding from the permanent. Rotterdam, Netherlands: 010 Publishers. Source: (Leupen B. 2006).

Site and services

Rooted to 1970s, incremental architecture emerged through an experience of site and services/core house projects (Fig. 44). The term "site and services" was used to describe a project strategy of a legally titled lot with utilities of water, sanitation, and streets that is supported by institutions. The project consisted of some sheltering basic options that ranged from a simple one-room structure with kitchen and bathroom to a bare lot with connected utilities (Goethert 2010). Despite that preliminary evaluations were negative; in the long-term, the experience of "site and services" worked to produce successful expansions of the housing lots (Goethert 2010). Incremental strategy has been adopted in many countries around the world; Latin America, Thailand, Sudan, Poland, Turkey, and others.

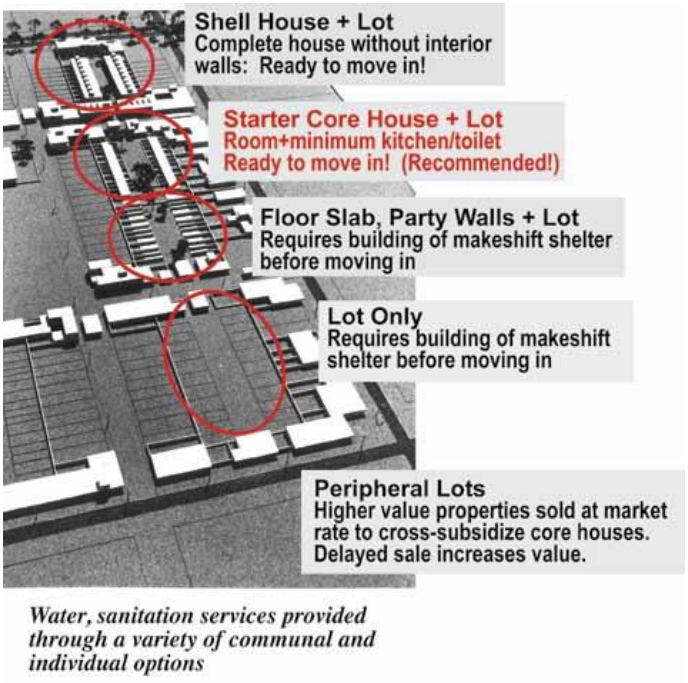


Fig. 44: Site and services, 1970s. Source: (Goethert 2010).

Incremental conditions

For Incremental strategies to be applicable in a certain frame, three conditions need to exist, these conditions create challenges for the implementation: 1- Founding a certain narrative to frame the construct of land development, 2- The possibility of arranging a starter core for each unit, 3- Generating and achieving supporting policies and programs for implementation (Goethert 2010). Statistics should be conducted to have a clear insight over the number of people in need for this kind of accommodation which would present the most convenient solution for their displacement, considering the urban capacities for sustainability in both short and long-term development. Incremental strategy could be adopted from the initial process of reconstruction constantly with the evolution of this process as it could be built in the locations of permanent reconstructions and interventions, focusing on the conclusive acceptable minimum rather than the perfect and desirable (Goethert 2010). Furthermore, choosing an appropriate location is always a problem which should be addressed to avoid the failure of providing uncontrolled expansions in unfavorable areas.

Incremental methodology

Incremental strategy relies on the adaptation of each construction step with the local capacities and allows the evolution and expansion simultaneously with the community growth and development (Kinsella 2016). It embodies a moving state of architecture that could replace the static state in time-based and promptly responsive statuses as it is required in post-disaster and post-conflicts cases through the transition phase of recovery and reconstruction. That is to say that incremental architecture could lead to a new visibility of permanency which expresses the flexibility aspects of architecture in a further manner.

The process arises from a starter core which must be built in subjection to specific guidelines, in order to allow safe expansions and appropriate construction approaches in the future. Thus, providing the resident with a finished part of a house to live in while constructing the other parts of this house at the same time (Alananga et el 2015). This core generally consists of a living space with a kitchen and a bathroom, with connections to the urban area. The infrastructure is also developing incrementally along with the core units since the starter cores along with their land frame help in defining a neighborhood and streets and provides a range of options for future expansions (Goethert 2010). The residents are responsible to adding the next layers of extensions according to their capacities and needs over an unspecified time limit. In that way, they evolve their dwellings flexibly without cost and time constraints to eventually achieve their desired home.

Incremental architecture combines the quick responsivity of the temporary housing and the static stability and comfort of the permanent housing (Kinsella 2016), since it

allows for gradual evolution, construction, and expansion of the residential unit. In other words, it could formulate an answer to all the demands of rapidity, large-scale responses, and immediate relief along with long-term building perspective (Goethert and Director 2010). Therefore, the strategy of incremental housing could form an answer to the problems and inadequacies that temporary housing produces as previously outlined. However, individual self-driven expansion of the dwellings should be controlled, monitored and linked to the infrastructure concerns of the city. Since this strategy of incremental process is linked to the long-term reconstruction, it has serious impacts over the urban built environment and city development (Goethert and Director 2010). (Fig. 45).

Incremental Methodology

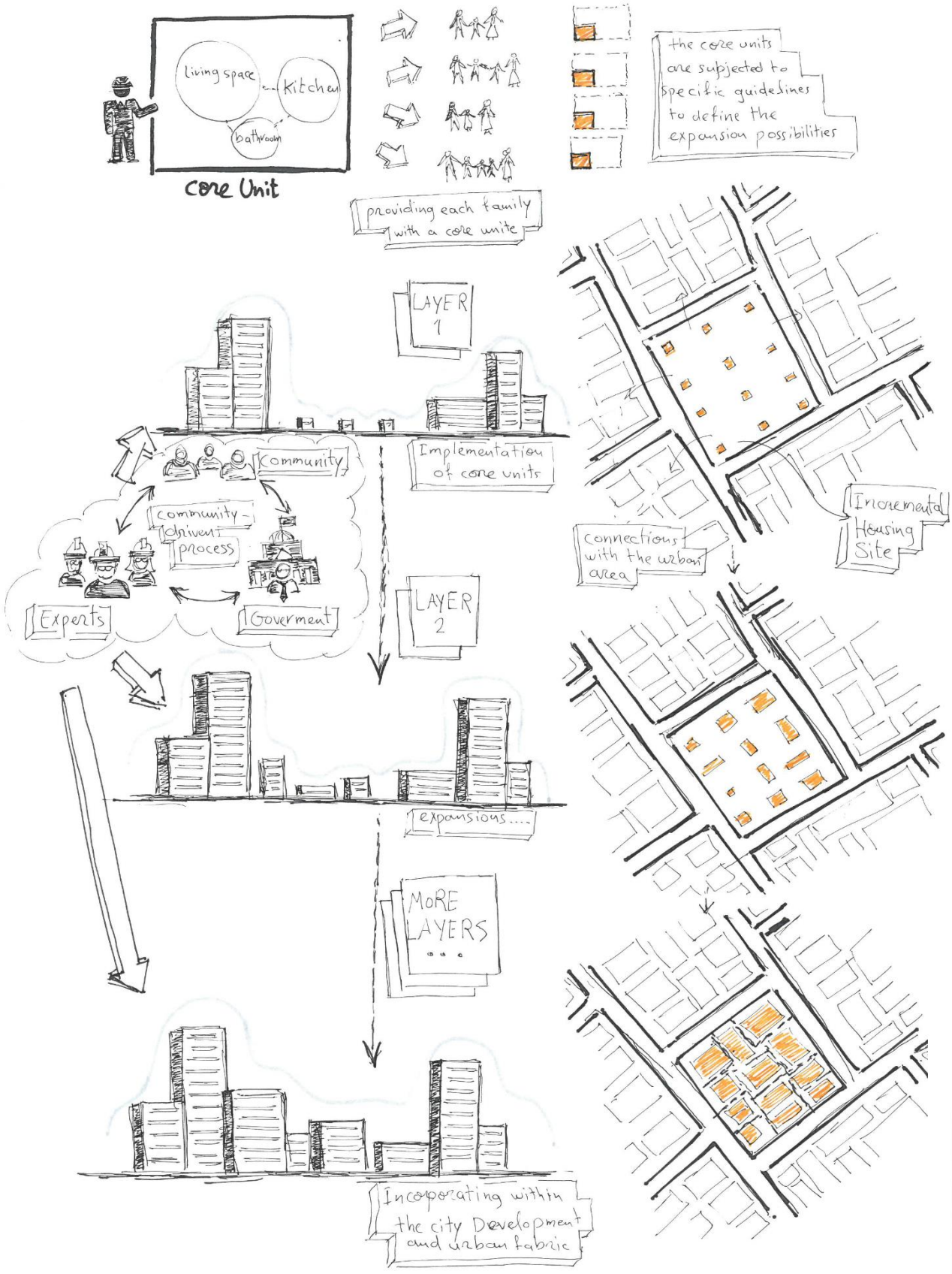


Fig. 45: incremental methodology.

2.3. INCREMENTAL KEY ASPECTS

A narrative of flexible increments

Flexibility means the ability of transformation in response to the changing needs and practices. Architecture is an adaptable practice that requires time considerations in terms of construction to respond to the changeable uses, practices, and activities of its users. To that end, the starter core must have simple but considerably sufficient elements and features that satisfy the functional and vital needs of the target families. For instance; the key elements such as living space with kitchen and bathroom, in other words, it provides a simple multi-purpose space with accessible facilities (Goethert 2010). The residents could then control the evolution and extension of their own space based on their capacities and requirements. So mainly, incremental housing offers the minimum and acts as an affordable way to resettle the displaced, homeless, or even low-income families and reconnect them with the urban life and development. Furthermore, this strategy gives the residents wider options concerning the decisions of forming their homes and promoting the possibilities of flexible expansions and spaces divisions (Goethert 2010), as each step or increment comes up with adaptability, flexibility and sensitivity potentials.

Incremental architecture could form a key part of the solution for the housing crisis following disasters and wars that result in disrupted communities, which need to benefit from the ability of architecture to shape responsive and flexible actions for different transformations and situations.

This strategy that touches the flexible sense of architecture could create a new meaning of permanency. Which is decided by the residents themselves according to their interpretations of their needs along with their ability to adapt them within a gradually evolved frame over time. This could be achieved from the earlier stages of the construction process depending on the existing infrastructure and the surrounding urban styles and keep evolving over time by responding to the changes of spaces and the needs of inhabitants. As a result, incremental architecture has been described as polyvalent as it alters the functions of certain spaces over time.

A narrative of flexible increments

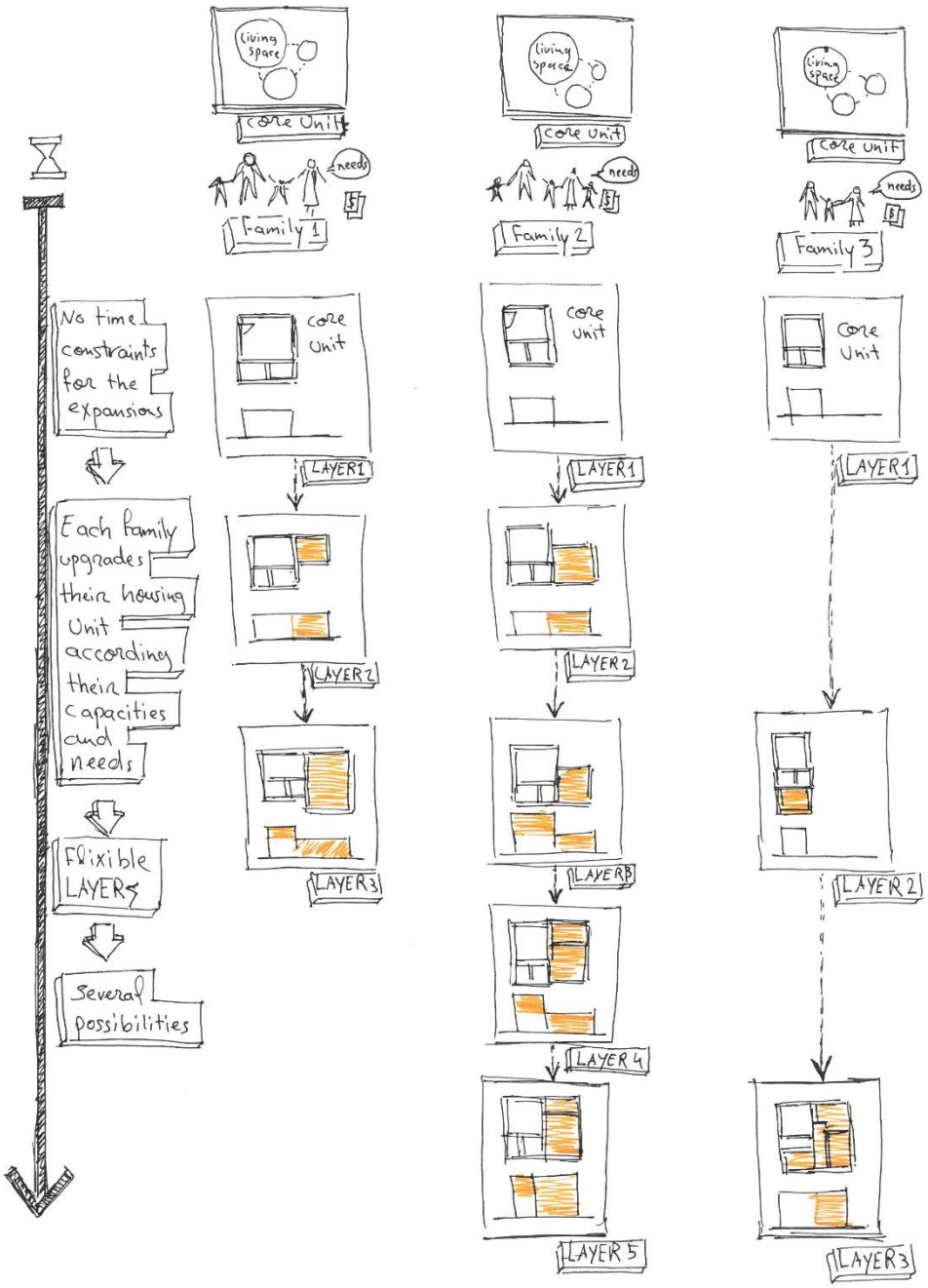


Fig. 46: A narrative of flexible increments.

A further method of consideration: Permanency is the new temporality

Underestimating the time factor through the design and planning considerations results in many architectural failures, which blur and ignore the evolution of the architectural object over time and the influences of the surrounding temporal and fixed circumstances (Taylor 2016). Contemporary architecture has more demands as it requires a wider consideration of the time factor and maintains adaptability over time. Furthermore, the matters of speediness and scale are becoming more controversial and provoke further challenges nowadays especially in the cases of disasters and wars (Goethert and Director 2010).

Oftentimes, temporary structures turn out to be permanent with time but lacking sufficient features due to poor consideration and planning. On the other hand, the communities are rapidly growing and changing, while the architectural appearance of the urban frame is still adapting slowly. In this quest, Leupen has expressed that it is hard to found a reality for the slow-moving medium as buildings under the quick movement of modernization and the unpredictability inherent in the process (Leupen 2005, p.12). The incremental housing strategy can be a successful key point for such cases, as it transcends the borders between temporary accommodation and permanent housing phases by defining each one as a complementary to the other to form a complete process.

In the frames of post-disaster or post-conflict reconstruction, different questions are posed concerning the temporality and permanency. The lack of time and other factors often result in an arbitrary planning without recognition of the circumstances and objectives of each of them. Therefore, this unconsciousness in decision-making generally consumes many resources and generates massive waste, which manifests in processes of demolishing, transferring, altering, constructing, and rebuilding. This kind of cycle could result in large failures in reconstruction scenarios. Thus, the planning in such cases poses challenges regarding the analysis of considerations, capacities, and adaptability over time taking into account the desired lifespans and the life cycles of materials. An important aspect that incremental architecture poses is the permanency which forms a fundamental basic for family stability. Taylor proposed that "a community's longing for permanence could be the new aesthetics of the temporary" (Taylor, 2016, p49).

Social Perspectives

Affordability for low-income communities

Providing affordable houses relies on adopting some subsidization policies that are capable of minimizing costs of housing options, therefore, allowing more people to obtain a housing opportunity. These affordable solutions move from having a housing

space with primitive and basic services that eventually turn into a complete house through a community-driven process. It differs from owner-driven process which is usually followed in informal clusters or slums, thus, it acts as a feasible way to meet demand at low cost and uses the capacities of the settlers, which in return establishes an identity relationship between the inhabitants and their new homes (Goethert 2010).

Building complete housing units limits the number of families to be housed, since it is accompanied with increasing costs, but they rapidly provide ready units with questionable quality (Goethert 2010). While conversely, core units providing minimum absolute needs can receive larger numbers of families with minimum costs. In this quest, Turner observed that when people have freedom to act, they prefer to live in large unfinished houses rather than in small finished ones (Turner 2007).

psychological recovery

In the disrupted war-torn or disaster struck communities, wide impacts are observed not just over the physical appearance of the cities and urban settlement, but also over the people and inhabitants of these communities. As these situations deeply touch the roots of the people's well-beings and normalcy and tear up their sense of home, this raises a challenge to take acute actions in order to give the disadvantaged groups back their sense of identity and affiliation. Thus, incremental strategy could present a considerably affordable solution to meet the needs and form a push for such low-income communities to succeed and revive themselves.

Moreover, incremental architecture has been examined in different frames of social housing in low-income communities, since it offers a response of displacement, identity and instability issues that disaster-affected communities suffer from. As Relocating and transitional living always forms an inconvenience and stress for people, since their sense of home and protection has been interrupted, incremental housing solves the issues of psychological needs like privacy, dignity, comfort that are higher after a trauma (Aytore, 2005; Halac and Yamacli, 2005; Limoncu and Bayulgen 2005).

Guided community participation

Incremental housing could hold further value than the building process itself, it could establish and support the social networks and offer some small-scaled commercial opportunities (Goethert 2010). Likewise, it gives the opportunity for the community to participate (Kinsella 2016) by involving the people in decision making concerning their own living environment (Hasgül 2016), allowing them to contribute to the design process and formation of their own residential spaces and adopt their own way of living. Therefore, this strategy could form a positive answer to the problem of cultural inadequacy that occurs in most of post-disasters and post-conflict scenarios, since the families will be able to deal with local skills and materials which set up a culturally

proper image (Goethert 2010). Also, this matter is potentially important, since the inhabitants of urban areas greatly impress the surrounding construction environment and the city development is considerably influenced by the inhabitants, therefore they should be involved in the evolution and reconstruction of their cities. Only the residents have the ability to bring the normality to the space they live in.

John Turner is a British architect who has been known as one of the primers that have been influenced by the incremental housing movement. He affirmed that when giving people the freedom to formulate their spaces, they produce the most appropriate and effective solutions (John Turner, 1967). In this quest, in order to get a successful incremental process where concerned people can be involved, there must be supportive programs and policies that control the process and promote the safety and good quality of construction and reinforce the sense of community within the individuals (Goethert 2010). Community participation should involve three actors to be successfully achieved; the individuals who are the beneficiary people, the public sector consisting of the governments and municipalities, and the private sector who are the experts (planners, architects, engineers, etc.), the three should be involved in making decisions together and collaborate collectively (Hasgül 2016). (Fig. 47).

Incremental strategy, social perspectives

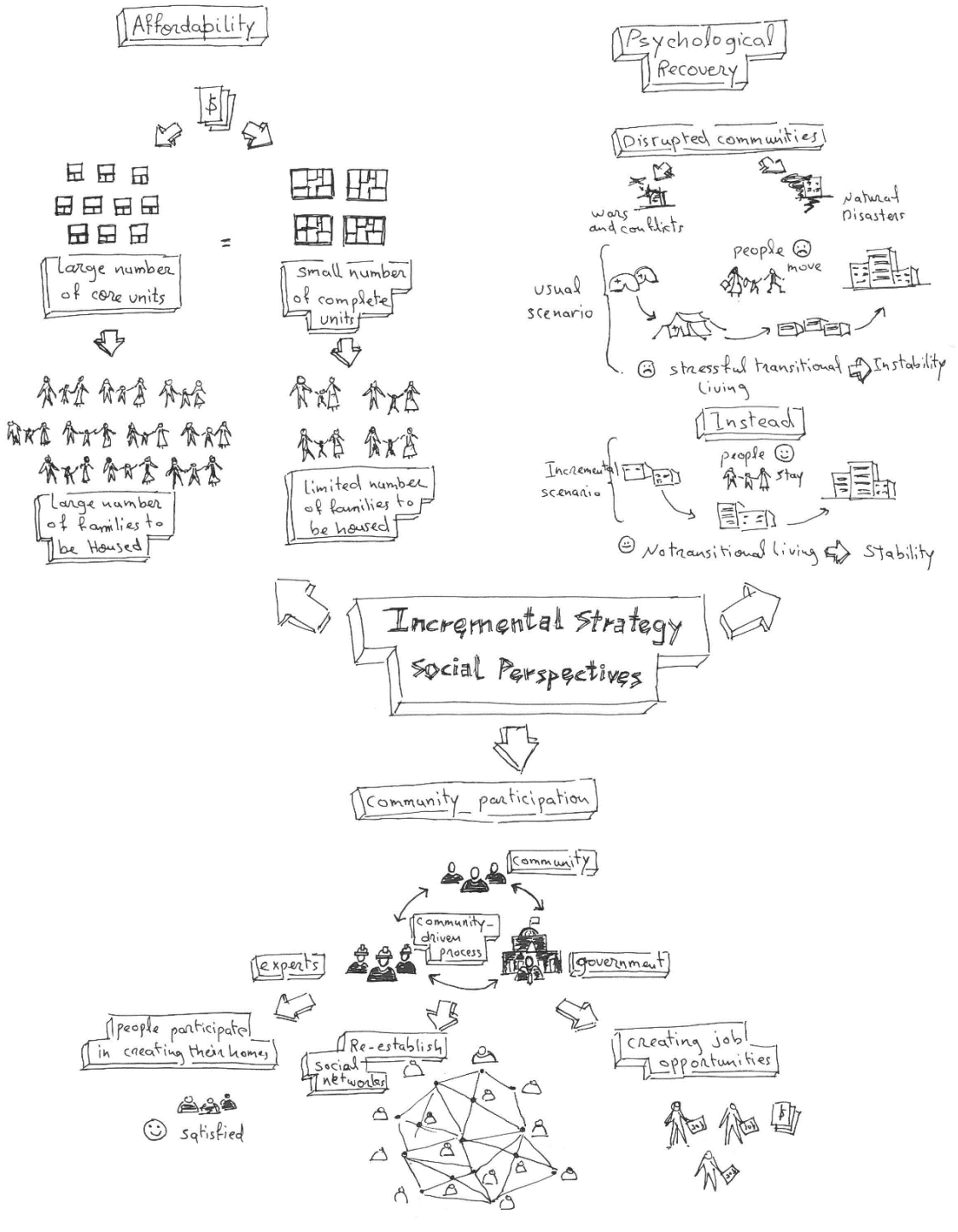


Fig. 47: Incremental strategy, social perspectives.

Towards sustainability

Temporality has problems regarding the invested resources, producing huge waste and failing to achieve the sustainable aspects; economical, environmental and social, the starter core minimizes source impact (Goethert 2010). This strategy could save the resources needed for the temporal construction and employ them in the permanent reconstruction process. As a result, it saves time and resources, and thus, provides a key to achieve the sustainable development by integrating both phases of the reconstruction process in one complementary process that reaches the goals of each phase in gradual manner. Achieving sustainable urban development in building housing, communities, and individuals following a housing crisis due to a destructive community action such as; wars and conflicts, natural disaster, etc.

Organized informality

High rates of urban growth and unsuccessful approaches of housing and spatial planning policies directly result in high growth of informal settlements (Arandel and Batran, 1996). The process of people-driven construction without authorization has been controversial due to the problematic issues it produces (Hasgül 2016). These issues are related to the quality of life within the informal settlements which have negative influences over the city scale to the minimum scale of individuals (Hasgül 2016). These informal housing squatters are characterized by insecurity of tenure alongside low standards of infrastructure and services (Ahsan and Quamruzzaman, 2009).

How incremental architecture deals with informal clusters and slums

Incremental housing strategy has been adopted as a key solution to the unregulated and amorphous conditions existing in informal settlements and slums, as it enables a three-sided collaboration process (Hasgül 2016). Here, the three actors are; individuals, public sector (governments), and private sector (experts), all brought together to act in an organized coherent relationship in a more efficient method represented in re-planning and reorganizing the slums and informal settlements. In addition to upgrading and improving them to have a homogeneous appearance that fits the surrounding city's architectural environment, along with creating a dimension which establishes key roots in the places where people interact with the support of their community (Fig. 48).

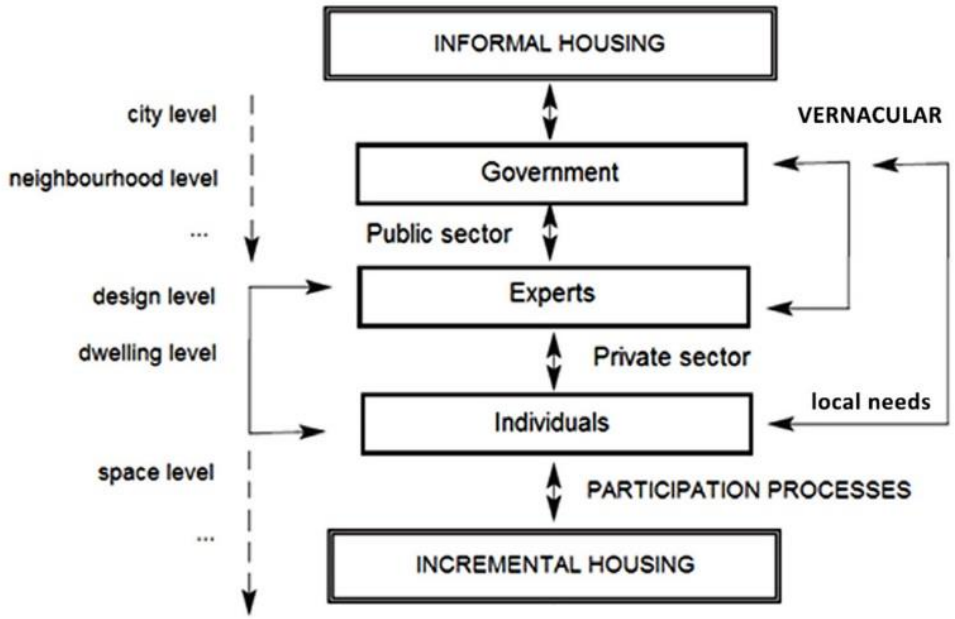


Fig. 48: The structure of participation process solution for informal housing: incremental housing. Source: (Hasgül 2016, 24).

Comparison between usual and incremental scenarios

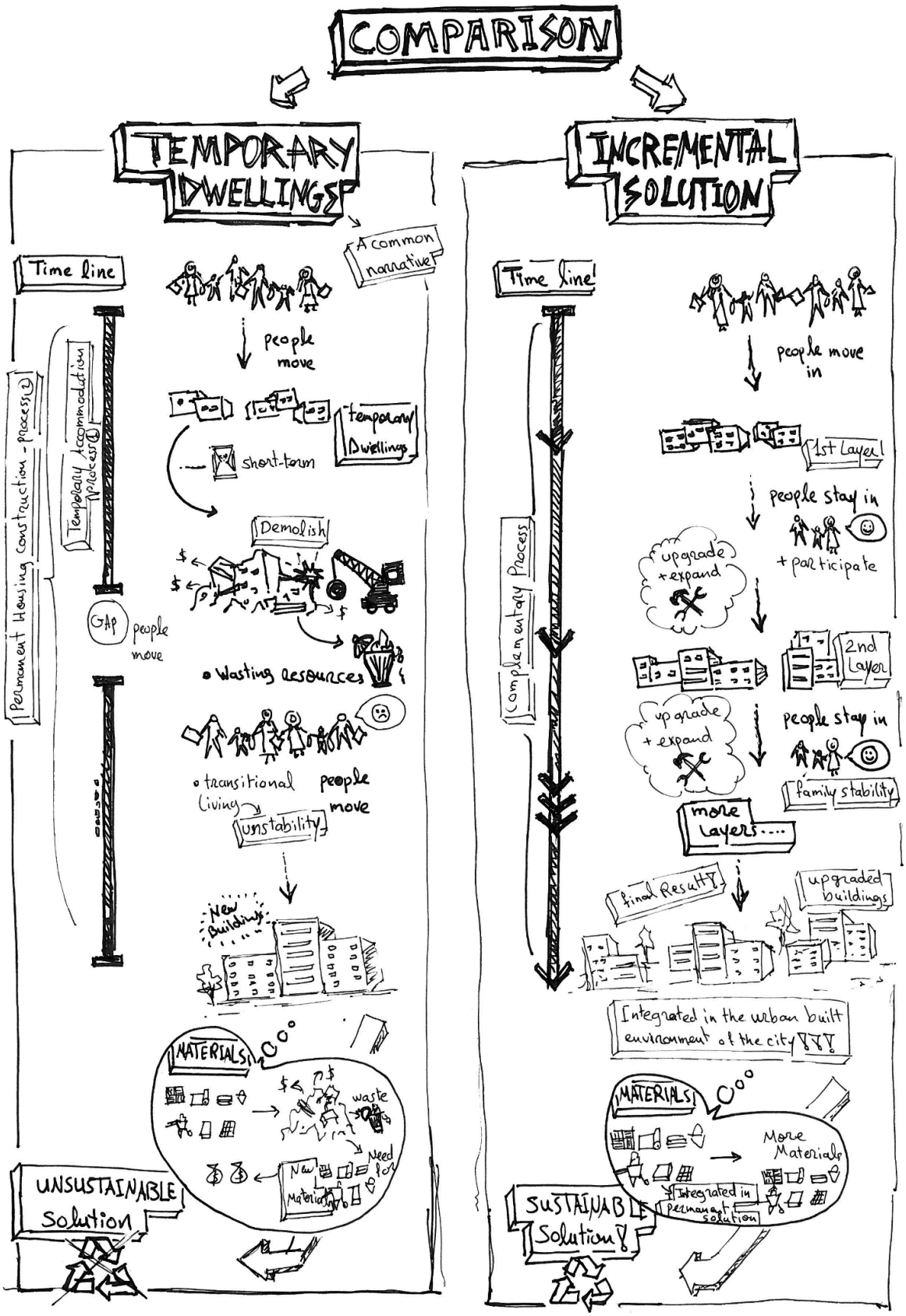


Fig. 49: Comparison between usual and incremental scenarios.

PART II

1. CONCEPTS

In this part of the research, some architectural practices and concepts coupled with some case discussions will be presented and elucidated in order to derive some principle ideas, guidelines and recommendations that would contribute to the development of the project proposal in later chapters.

1.1. INCREMENTAL CASES DISCUSSION

This discussion is based on existing work of architects Filipe Balestra and Sara Goranssn incremental housing concept in India, and Elemental social housing project by Alejandro Aravena in Chile.

Filipe balestra, incremental housing strategy in India:

Architects Filipe Balestra and Sara Göransson have developed incremental housing strategy to organize slums and transfer them into permanent districts in an in-situ community-driven process in Yerawada neighborhood in the city of Pune in India. The project started in 2008 and the main objective was to provide housing to 1200 families from seven highly densified slums areas in Yerwada and accommodate them by 2012 (Srivatsa 2015) (Fig. 50).

Fig. 50: Yerwada - Location of seven slums. Source: (Srivatsa 2015, 2).

The slums in Yerawada took two forms; the first was referred to as "*Puccas"* and was considered as standard for permanent constructions, the second form was temporary self-built structures made out of tin metal sheets, bad brickwork or other random materials. This form was referred to as *"Kuchas"* (Fig. 51- 52). and had worse qualities

in regard to tiny sizes, poor sanitation, and hygiene. (The Kuchas are usually 12 m 2 in size, housing 4-10 people with leaking roofs, unhygienic surroundings with no provision of proper sanitation, and no water supply). Therefore, *"Kuchas"* were prioritized in the aforementioned project (Srivatsa 2015).

Fig. 51: Cluster of Kucha houses. Source: (Srivatsa 2015, 5).

Fig. 52: Typical Kucha house. Source: (Srivatsa 2015, 5)

Their project strategy could be implemented anywhere. They incorporated the existing foundations and original dwellings within their approach instead of demolishing and rebuilding through a gradual improvement process (Cekic 2015). The project was implemented in India and subsidized by the central government there, who offered each family 4,500€ for building costs, including 270 square foot area with private kitchen and toilet (Kinsella 2016). the families were asked to contribute 10 percent of the costs. However, if families were not able to afford the 10%, their contribution could be as construction labourers instead. The process included effective participation of residents by connecting with the slum inhabitants through an NGO represented by women who used to live in slums, which resulted in establishing a stronger connection with the target community (Srivatsa 2015).

The concerned architects respected existing social networks and aimed for neighbours to remain neighbours (Basulto, 2009), as they did not relocate the residents by

demolishing and rebuilding in another location. The solution avoided jeopardizing the existing social networks, security, livelihood, and income resources. Instead, they adopted the incremental strategy to upgrade the existing slums and convert their deteriorating state into permanent urban districts.

The families had the freedom to choose between three basic prototypes according to their preferences and lifestyles (Fig. 53):

Fig. 53: mixed cluster perspective (three housing typologies) by Filipe Balestra and Sara Göransson. Source: Architecture Daily. Photo available at: https://www.archdaily.com/21465/incremental-housing-strategy-in-india-filipe-balestra-sara-goransson/1627836940_mixed-cluster-perspectivejpg

Type A: is a traditional two-story structure, allowing vertical expansions (Fig. 54).

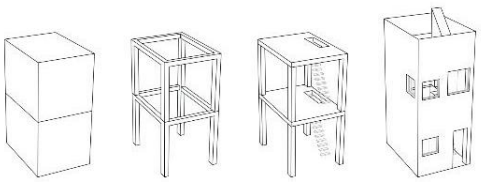


Fig. 54: Housing type A. Source: Architecture Daily. Photo available at: https://www.archdaily.com/21465/incremental-housing-strategy-in-india-filipe-balestra-sara-

Type B: is a three-story structure, which has incrementable ground floor which is open for parking or shops (Fig. 55).

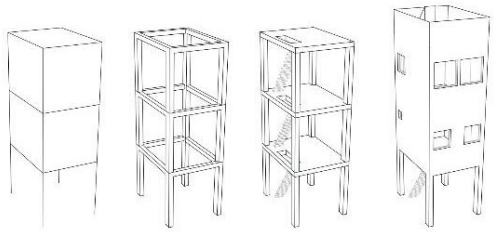


Fig. 55: Housing type B. Source: Architecture Daily. Photo available at: https://www.archdaily.com/21465/incremental-housing-strategy-in-india-filipe-balestra-sara-goransson/990937626_house-bjpg

Type C: is a three-story structure, which has incrementable middle floor as an outdoor space to hang the laundry, or to be used as an outdoor veranda room (Fig. 56).

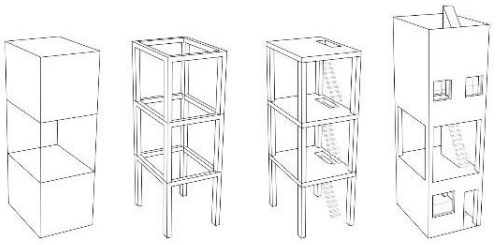


Fig. 56: housing type C. Source: Architecture Daily. Photo available at: https://www.archdaily.com/21465/incremental-

All proposals were designed for a single family and each had an area of 270 square foot (25 m^2).

(Fig. 57-Fig. 58) illustrate the possible scenarios of developing the Kucha slums relying on the incremental strategy.

Fig. 57: Possible Scenario of depending incremental strategy. Source: Dezeen. Photo available at: http://www.dezeen.com/2009/05/05/incremental-housing-strategy-by-filipe-balestra-and-sara-goransson/

Fig. 58: The new archipelago of incremented kucha houses rising from a sea of well-built permanent homes in a typical slum. Source: Dezeen Magazine. Photo available at: http://www.dezeen.com/2009/05/05/incremental-housing-strategy-by-filipe-balestra-and-sara-go

Alejandro Aravena, Quinta Monroy

In 2003, the office of Architect Alejandro Aravena was recruited to undertake a social housing project in the city of Iquique to improve living conditions in poor areas in Chile.

The target site was in the centre of the city, known as "Quinta Monroy", and occupied an area of 54,000 sq ft (5,017 m^2). (Fig. 59). It was home for 100 families settled in informal dense clusters with poor qualities of life. The goal was to accommodate the families in the same site that they illegally occupied for the last 30 years instead of moving them to the outskirts.

Fig. 59: Quinta Monroy, as seen here before Elemental's project, is representative of Chile's informal urban settlements. Source: Elemental.

The budget was limited, about 7500 US$ per dwelling for land, site development, and construction (Bellin 2011) Aravena had an uncommon thought: the wisdom of favelas, he had a vision; which was spending the specified budget to build a half proper house in terms of size, location, and qualities rather than a complete small house. Therefore, he used an open system defined by boundaries of solid structure and thus, he set a specific framework controlling the building possibilities in which each housing unit could be expanded once (Cekic 2015). The interiors of the units were left bare and unfinished similarly for the residents to decorate and add partition walls and other preferences. In conclusion, Aravena used the budget as an investment rather than an expense of house (Tory- Henderson 2016). (Figs. 60- 61).

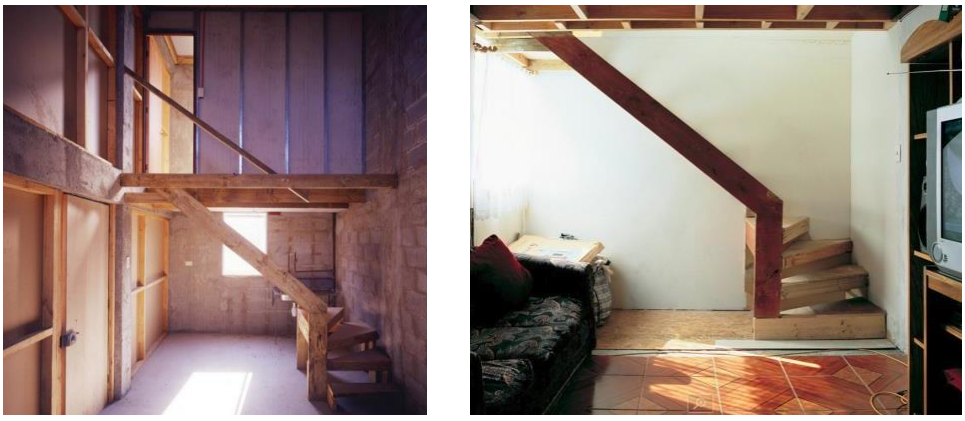


Fig. 60: Interior staircase as delivered (Top), and after personalization (Bottom). Source: Elemental.

Fig. 61: Interior views of a unit in Quinta Monroy showing before (Top) and a2er (Bottom) self-constructed modifications include windows, 0oor surfaces, and painting. Source: Elemental.

As a result, the units were in quality locations and cheap, and the size of the units did not decrease which in return provided middle-income houses instead of small houses, in addition to the freedom to customise the dwellings by their inhabitants.

The delivered half houses were two-storied with a space left between houses for expansions (Figs. 62- 63). Each half house formed a core of a home to be completed by the residents in a well-located area and contained all the basic and essential elements and utilities which cannot be built by the residents such as the supporting structure, stairs, bathrooms and kitchens. The rest of elements; partitions, interior finishes, and the remaining enclosure would be left for the families to build.

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Fig. 62: Quinta Monroy before and after resident's additions. Source: Elemental 2014.

Fig. 63: Quinta Monroy before and after resident's additions. Source: Elemental 2014.

Aravena referred to the process as "infrastructure as housing". His process included engaging the community on various levels as he involved them in discussions around the concepts and strategies of planning. In coordination with them, he set the building code and a modifications guide explaining the maintenance and expansion possibilities. Additionally, he agreed on the requirements with a representative team elected by the community. These considerations have resulted in the success of the project as it held social and cultural values (Bellin 2011).

The budget of each housing units was 7500 dollars; therefore, the total budget was 750,000 dollars for 100 units.

1.2. VERNACULARITY VS MODERN-DAY

Vernacularity means the adaptation of the culture, climate, local, and regional conditions within the architectural practices. Vernacular architecture represents the cultural identity of a certain space represented in the accumulated practices by the community individuals, which results over time in a particular sense and coherent spirit reflected in the building forms and surrounding architectural and urban context creating the social living space.

Vernacular architecture basically depends on using local materials and methods to satisfy the local needs based on local traditions (Hasgül 2016). Hence, producing solutions to the challenges imposed by the environment such as regional climate (El-Borombaly and Molina-Prieto 2015).

In this context, Oliver interprets vernacular architecture in his authoritative edited Encyclopaedia of Vernacular Architecture of the World as comprising of *"... dwellings and other buildings of the people. Related to their environmental contexts and available resources, they are customarily owner- or community-built, utilizing traditional technologies. All forms of vernacular architecture are built to meet specific needs, accommodating the values, economies and ways of living of the cultures that produce them"* (1997). In this sense, Bernard Rudofsky's point of view demonstrates that Vernacular architecture does not go through fashion cycles **(1965),** it compromises different aspects of localness; climate, traditions, local materials, location-place identity, etc. (Hasgül 2016).

When talking about vernacularity, we cannot overlook Hassan Fathy, who was a pioneer in discussing and incorporating the vernacular architectural concepts in his approach of new Gourna (1945-1948), where he applied vernacular building forms and methods to address the socio-economic and environmental actualities of the locals (1976). (Figs. 64- 66).

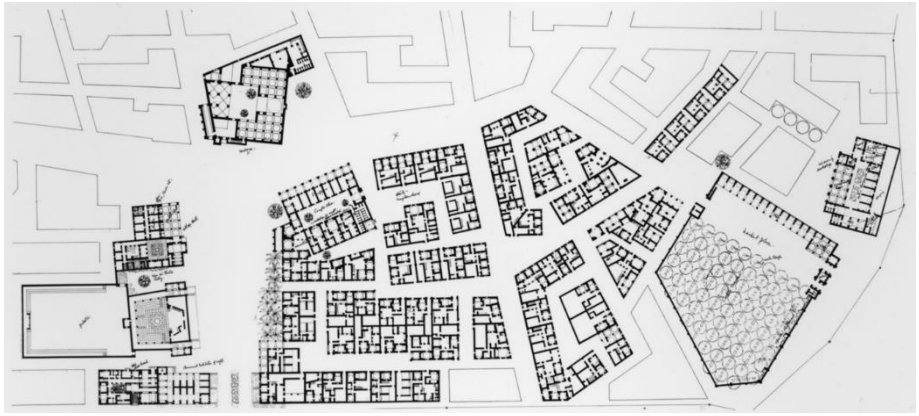


Fig. 64: New Gourna Village Plan (1945-1948) by Hassan Fathy, southern corner of community, floor plans of family neighbourhood buildings. Source: Aga Khan Visual Archive. Photo available at: https://dome.mit.edu/bitstream/handle/1721.3/73766/157468_sv.jp

Fig. 65: New Gourna Village by Hassan Fathy just after it was built. Photo available at: http://www.touregypt.net/featurestories/newgournaupdate.htm

Fig. 66: New Gourna Village by Hassan Fathy. Photo available at: https://www.pinterest.pt/source/arquitecturasdeterra.blogspot.com.es/

A Glance into the vernacular architecture in Syria

In the Middle East, the vernacular architecture was the product of the land, the local climate and the culture (El-Borombaly and Molina-Prieto 2015).

Courtyard houses used to form the basic dwellings of residential settlements and urban areas in the near east region (Inceruh 2012), (Fig. 67). Courtyard housing dates back to the third millennium Before Common Era (Zein Alabidin 2011), and later on became a fundamental typological element in Islamic architecture (Inceruh 2012). Yet, it had been adopted until the end of the 19th century in rural and urban areas in the near east. Courtyards have been known as the micro-climate modifiers in the near east, they, along with their accessories such as wind catchers (malqaf). (Fig. 68) have supplied houses with internal comfortable environment that produced natural appropriations to air circulation, ventilation, and lightning in accordance with the local conditions and weather status, which in Syria is characterized by long, dry, and sizzling hot summers, and cold winters.

Fig. 67: Figure 14: A typical urban courtyard house in the Near East. Source: (Inceruh 2012, 7).

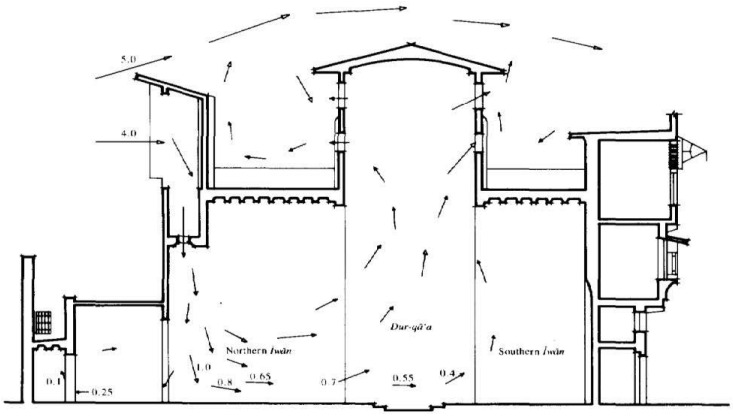


Fig. 68: Multi-directional Wind catcher (Malqaf). Showing how the malqaf and tower-escape produce internal air movement. Source: Fhaty (1986), On line: New Zealand Digital Library.

The potential of using the courtyard in housing typologies is to fulfil the inherent need of the locals for an open living area, where all the daily activities and family practices occur, attributing to the flexibility of the functional space represented in the courtyard where different uses and activities could be embraced, such as; a children playground, a garden with vegetation and water element, a place for family gathering and guests' reception, doing the laundry, etc.

Although courtyard houses in Syria were similar in terms of building typologies and materials, distinction in sizes can be noticed. Some houses had more than one courtyard, which could be an indicator to luxury, family size, and wealth; some big luxurious houses used to accommodate two or three families (for instance; the original family and the families of their sons). (Fig. 69). On the contrary, modern housing

concepts consider multi-family dwelling as an indicator to the low quality of the building and the low income of the families (Inceruh 2012).

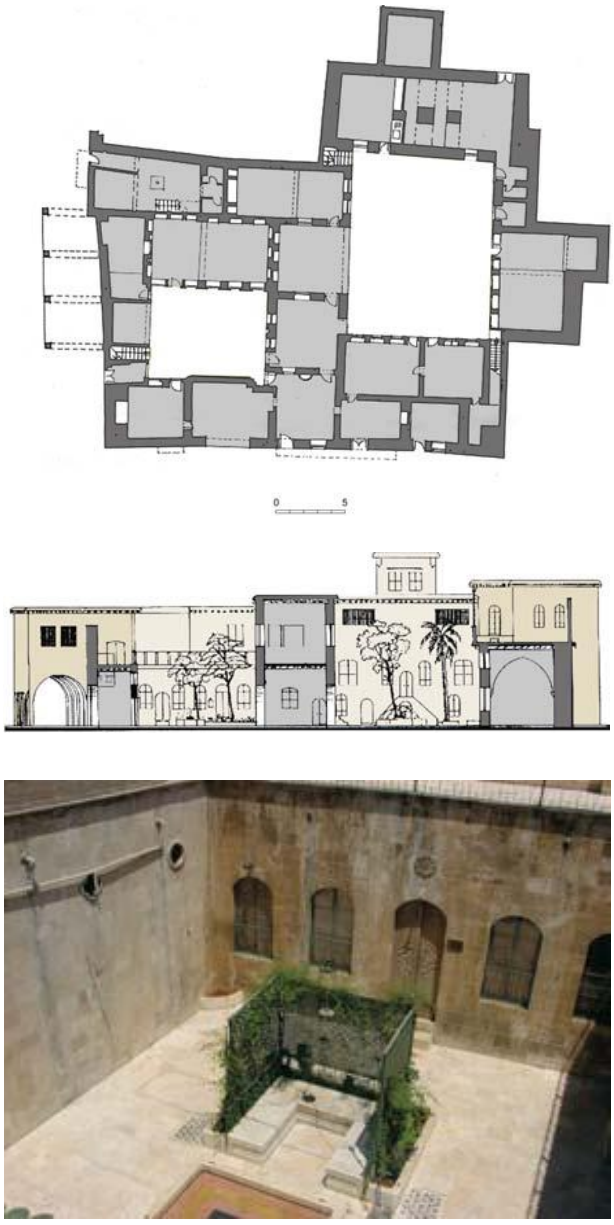


Fig. 69: Urban courtyard house in Syria with two courtyards. Source: (corpus levant 2005).

The modern industrialized world and rapid urbanization growth posed new challenges, which resulted in new trends and technologies in architecture and constructions. In response to the large-scale population growth in urban areas in the near east countries, new construction activities and building practices have been put to use, and designs were influenced by European physical standards and building models and systems since 1960s (Inceruh 2012). The Modern Movement in 20th century, especially after the Second World War has directed the vision towards new technologies and energy resources producing the so-called "international style" trend that ignores all vernacular traditions and their sustainable appropriations, by relying on energy-based solutions to reach thermal comfort like air conditioners and heating (El-Borombaly and Molina-Prieto 2015).

Building solutions and systems started being imported from both eastern and western Europe, represented in concrete blocks and prefabricated systems for housing construction in order to provide dwellings to the increasing numbers of population within a relatively short time (Inceruh 2012). These practices have neglected the indigenous building concepts and often fell into misappropriations to local conditions and needs. However, the growth has gradually brought changes and new forms to the near east, which put an end to courtyard houses in these countries (Inceruh 2012), including Syria, where traditional architecture has almost completely vanished as a result of variety of causes including: rapid urbanization, standardization of construction technologies and architectural education, and the development of the modern lifestyles due to the modern movement applications (Chibli 2004).

Modern strategies have been adopted since the early 20th century in the Middle East leading to scarce attention to the indigenous architectural identity (Nooraddin 2012). Subsequently, Syrian cities in the 20th century adopted the western planning concepts and codes which resulted in separating the old cities from the rest of the urban environment by surrounding it with high-rise buildings courses (Chibli 2004).

Modern house plans in Syria show explicit influence from European typologies and western architecture ignoring traditional forms and concepts, and rely on prefabricated concrete systems provided with lift (Fig. 70). A contemporary Syrian housing unit consists of an area ranging from 100 m^2 to 200 m^2, accessed by an entrance from the vertical connection elements (stairwells and elevator) leading to the housing units' entries which consists of a small lobby or/and a distributor corridor linking the internal spaces, which usually take two separated sides in the housing unit. One side for daily activities and visitor accessible compartments which are the kitchen, toilet, living room, and a salon for receiving guests often with a dining room. The other side of the unit is the private part which is only accessed by the house residents and their close relatives or friends, this part comprises of the bed rooms and private bathrooms.

Fig. 70: A residential neighborhood in Latakia, Syria, showing modern byilding types. Photo available at: https://commons.wikimedia.org/wiki/File:Modern_neighborhood_-_Latakia,_Syria.jpg

Since the 1960s, more consideration has been put to regain the cultural and traditional concepts and put local architectural forms in use (Nooraddin 2012). Recently, the political changes and challenges that have been occurring in various regions of the Middle East, have highlighted the need to revive the identity in these places through architecture, which has been blurred and neglected due the control systems and power holders (Nooraddin 2012). In this quest, many researchers in the Middle East have been working on recuperating the employment of vernacular concepts and elements in contemporary sustainable practices (El-Borombaly and Molina-Prieto 2015).

In the 21st century, new endeavours emerged to recover the so-called *"ancient wisdom embodied in designs"* reflected in the architectural sustainable practices offered by vernacular architecture, which does not require technologies or sophisticated equipment and energy consumption to attain comfortable temperatures. Therefore, many architects reconsidered traditional practices of vernacular heritage in seeking sustainability (El-Borombaly and Molina-Prieto 2015), in this quest, Gil Crespo asserted *"One of the benefits of vernacular architecture is that it is able to ensure a stable and comfortable indoor environment against climatic environmental conditions" (*2014: 846).

New trends in architecture consider the sustainable dimension to be incorporated within the architectural practices drawing on energy efficient designs and concepts (Chibli 2004). In this context, vernacular architecture has been described as a pragmatic language tackling the users' well-being, and generating sustainable values as it is featured by low maintenance, energy efficiency, functionality, and sensitivity to the local needs as it is developed by them (Bianco 2016). Vernacular architecture in Syria introduces many sustainable solutions to the local environment challenges, such as the wind-catcher (malqaf) which has been commonly adopted as an architectural feature in buildings resolving some modern environmental problems (El-Borombaly and Molina-Prieto 2015).

Our contemporary architecture should inevitably mind the relationship between man and environment, and should present a response to the needs within a certain environment. This indicates the provision of habitable conditions that address the local circumstances within this environment. In other words, the provision of qualitative requirements concerning comfort, safety, local and social values, and standards should be expressed within the local architecture and should influence it in a way that gives a particular spirit to the place in where it stands.

In synthesis, contemporary architecture should compromise and create a balance between the past architecture that inheres the identity of the space and modern-day requirements to meet contemporary needs and technologies. And thus, generating a vernacularity-inspired contemporary architecture that achieves both social and economic sustainability (Bianco 2016).

Given these points, many lessons can be learned from the architecture of the past, which held great values and characteristics that have always been valued by the locals in order to regenerate forms and concepts allowing the continuity between the past, the present, and the future. This can be achieved based on a rigid understanding of the space-form coherence and concepts to produce architectural languages that interpret the existing world demands and overcome its challenges by being sensitive to the frequency of accelerated changes (Inceruh 2012).

Vernacular architecture was capable of building very strong relationships between housing and its larger context (Rapoport, 1969 pp. 70-75). Therefore, traditional and vernacular architecture should be considered as a reference and operational foundation to the contemporary approach. This could be achieved by preserving cultural significance and values and permitting their evolution over time within the society (Nooraddin 2012). Consequently, constructing a bridge between vernacular architecture and contemporary architecture to link the sustainability, identity, and autonomous values of vernacularity together with modern day challenges and demands (El-Borombaly and Molina-Prieto 2015).

Marwa Al-Sabouni who is a young Syrian architect from the city of Homs, came up with a housing proposal for reconstructing the neighborhood of Baba Amr in Homs by her contribution to the UN-Habitat competition.

Her proposal relied on reviving the city through revitalizing its social and mass housing areas. She employed several features from the traditional vernacular architecture of the city in her proposal addressing all the social, cultural along with contemporary requirements. She suggested a *"tree unit, growing upwards, offering flexibility and the possibility of future vertical growth"*. (Al-Sabouni 2016). The "tree unit" consisted of different interactional spaces including commercial shops for the residents, apartments with

courtyards. In her proposal, Marwa Al-Sabouni considered the local concerns of the residents, therefore, she controlled the level of openness and privacy permissible. For instance, the windows and porches were not to reveal the inner life in the apartments, and the apartments can branch up in a way that their private courtyards are protected while at the same time they are opened to both inside and outside. The tree unit in connected to the surrounding tree units forming an organic urban fabric. Al-Sabouni stated: "*Each Tree unit holds hands with the surrounding four Trees, composing an urban fabric that is able to grow and spread organically. Underneath the Trees, shaded and open areas are created for parking, gardening, playing and leisure*" (2016). (Figs. 71- 74).

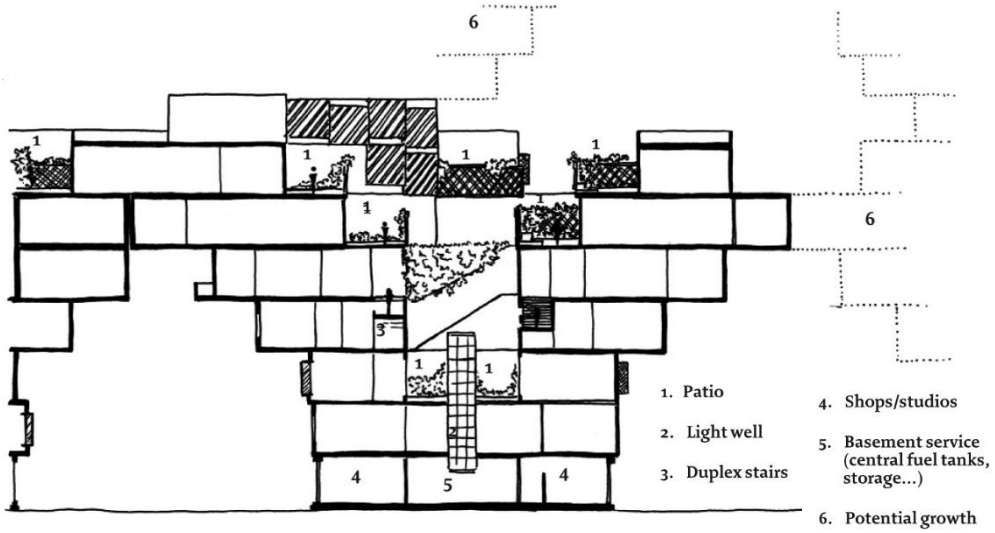


Fig. 71: Cross-section of the Tree unit showing how it is related to the next unit and how the inner patios are arranged. Source: (Al-Sabouni 2016, 112).

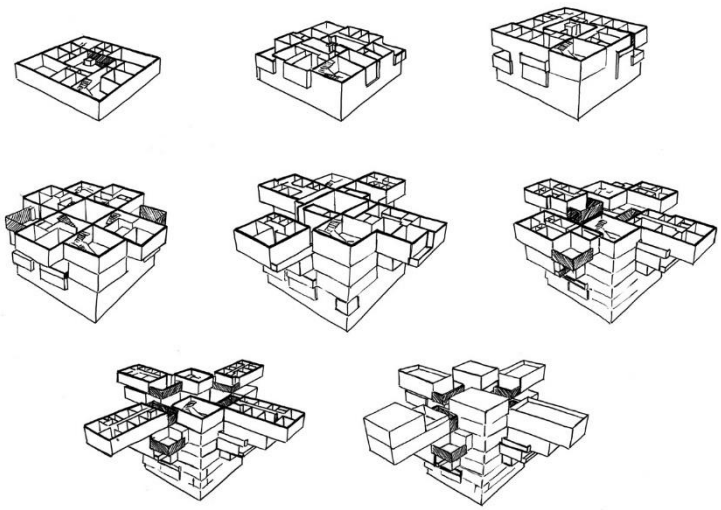


Fig. 72: The Tree unit 'growth'. Source: (Al-Sabouni 2016, 113).

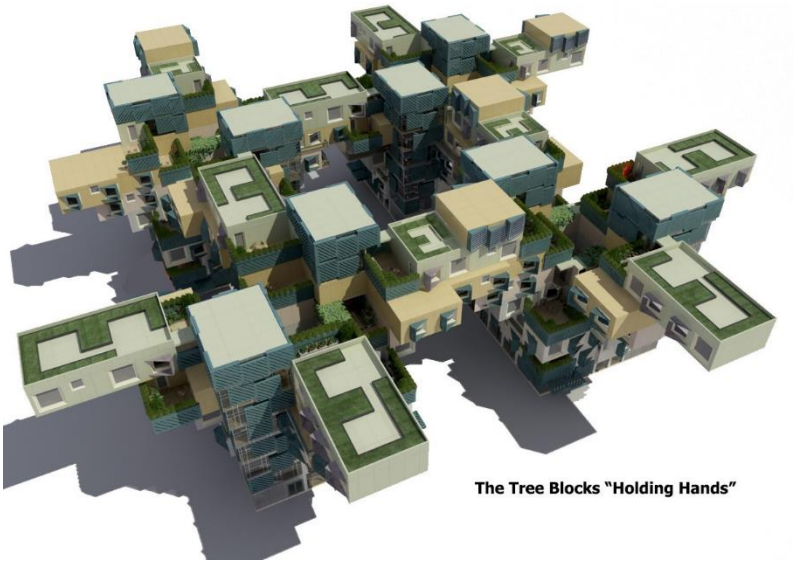


Fig. 73: The Tree Blocks "Holding Hands", by Marwa Al-Sabouni. Photo available a: https://www.archdaily.com/793668/marwa-al-sabouni-explains-how-syrian-architecture-laid-the-foundations-for-war/57b75501e58ecea57b0002b6-marwa-al-sabouni-explains-how-syrian-architecture-laid-the-foundations-for-war-image

Fig. 74: Marwa Al-Sabouni proposal for Baba Amr. Photo available at: https://www.archdaily.com/793668/marwa-al-sabouni-explains-how-syrian-architecture-laid-the-foundations-for-war/57b89546e58ecec2080005e9-marwa-al-sabouni-explains-how-syrian-architecture-laid-the-foundations-for-war-image

1.3. THE STRATEGY OF MAT-BUILDING

Mat-building phenomenon is rooted back to the 1950s as an architectural practice discussed by team 10, who had a critical opinion of the modern movement concerning the concepts of housing design and urban planning that divides cities into separated functional zones. They had elemental role in shaping and elucidating the idea, and spreading it out through their collaborative meetings and later in their implemented projects(Alsaden 2013), that have reflected the mats in their urban composition, architectural identity of surroundings, and renewing design and transformability (Forés 2006). Notably, their work was inspired by the vernacular architecture of Arab cities (Itma 2016, 6).

Team 10 Suggested an Interconnected relationship between the functions of daily life which has been described by Le Corbusier's Athens Charter at the 4th CIAM congress (1933) to be; living, working, circulation, and creation (Forés 2006). (Fig. 75).

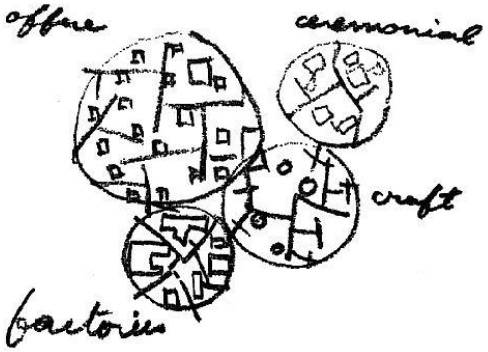


Fig. 75: Cluster of overlapping functions. Source: Smithson and Smithson 2005.

Team 10s views were argued by Alison Smithson who published her fabled article "how to recognise and read mat-building: mainstream architecture as it has developed towards the mat-building" (1974), which became a manual reference for understanding the meaning and characteristics of mat-building (Alsaden 2013). Smithson presented in her article the concepts and properties which elucidate the term of mat-building relying on analyzing different projects and describing its ability to form an interconnected relationship between both the functional and structural fabric which allows more freedom for the individuals and provides more possibilities and flexibilities to growth and change.

Smithson's discourse about mat-building was influenced by the traditional Arabic Casbah (1974) which she described as a metaphorical reference; *"full of starts and stops and shadows… with a high degree of connectedness to allow for change of mind and the in-roads of time"*. Smithson used the term *"Casbahism"* considering the traditional Arab city is the mat-building's *"formative influence from the immediate past"* (Smithson 1974, 573). Likewise,

she presented numerous examples and images of Islamic and Arabic architecture in different parts of the world elucidating how the effects of their typologies and architecture later embodied their influences within the mat-building subject.

In their re-conceptualization of the urban tissue, Team 10 departed from the single dwelling as a cell embracing human activities. The urban fabric is composed of a number of cells to be assembled to establish a complex spatial variation between private and public space (Forés 2006). The cell system employed the courtyard house as an organizing cell for the evolution, as the courtyard represents a climate modifier in the pivotal center of the house which could take different forms and features to adapt the climate conditions. Subsequently, the assembly of the cells results in a cluster of multiple spatial compositions of organized patterns of use (Forés 2006) offering a climatic, social and cultural atmosphere. (Fig. 76).

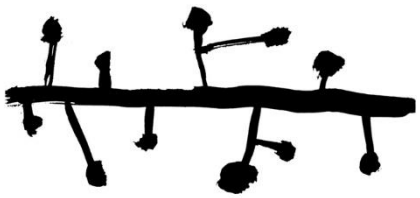


Fig. 76: Cluster diagram of Fold Houses, 1955, Source: Smithson and Smithson 2005.

The new idea of mat-building attracted attention within post-WWII European architectural practises and culture (Alsaden 2013), when social and economic growth became visible and concerned in seeking the welfare state (Calabuig, Ramos, and Gómez 2013). he free university of Berlin was considered as a pioneer model of mat-building by Candilis-Josic-Woods in 1963 (Fig. 77) who pointed it out as "*ground scraper*". In this project, Team 10 tried to express the environmental comprehensive perception of mat-building within a sizable and rapidly growing institution (Forés 2006).

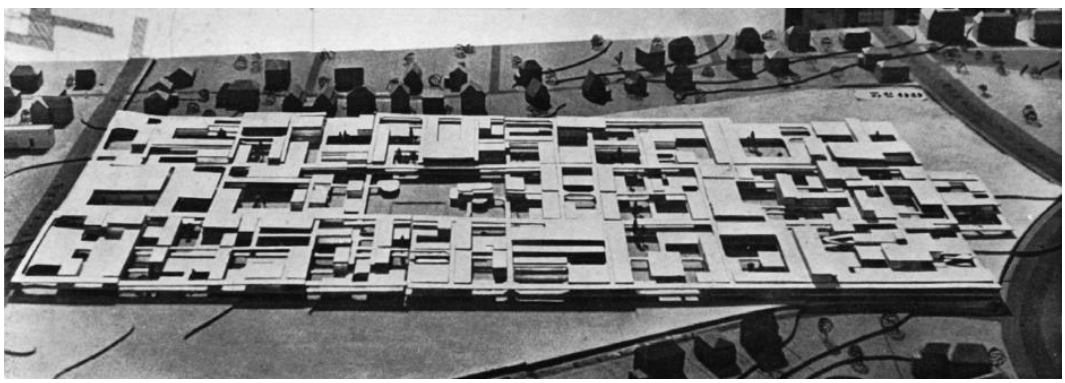


Fig. 77: Competition design for the Free University, Berlin, 1963, Source: Joedicke, 1968.

Likewise, mat-building strategy has been implemented in many other projects such as; the centre of Frankfort Römerberg designed by Georges Candilis, Alexis Josic and Shadrach Woods for a competition collaborating with the German architect Manfred Schiedhelm (Fig. 78) , other mat projects were the Venice Hospital (1964-65) by Le Corbusier and Guillermo Jullian de la Fuente (Fig. 79), and a project in Kuwait entitled "Urban Study and Demonstration Mat-building (1968-72) by Alison and Peter Smithson (Fig. 80). Additionally, other housing projects were constructed based on this strategy such as; the Agricultural City (1960) by Kisho Kurokawa. (Fig. 81).

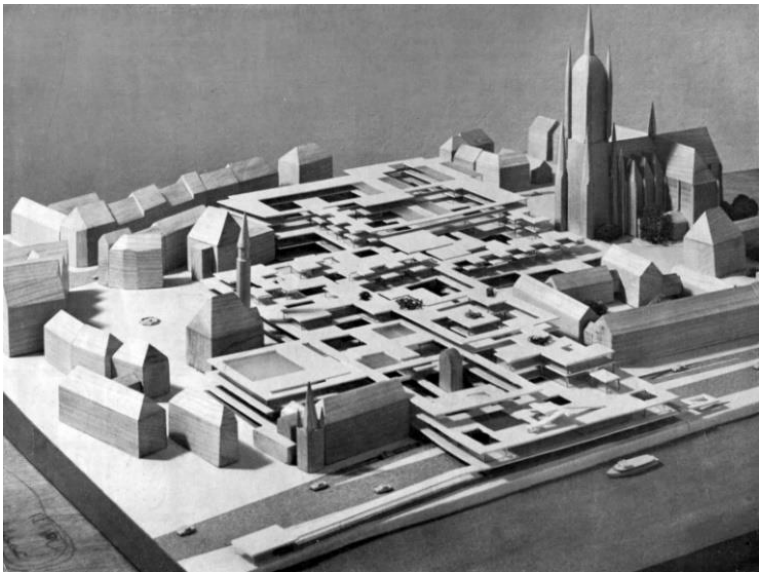


Fig. 78: Competition for the reconstruction of Frankfurt-Römerberg centre, 1963, Source: Joedicke, 1968.

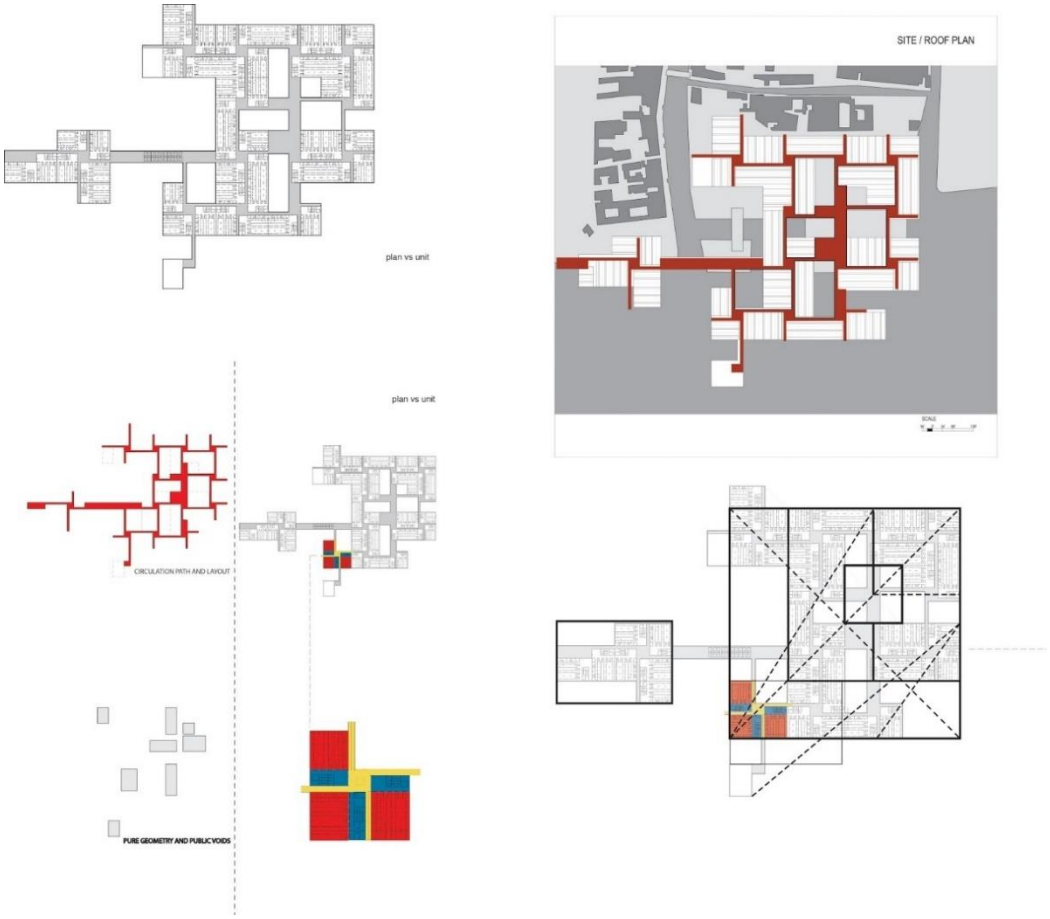


Fig. 79: Diagram_Analyzing Venice Hospital (Le Corbusier, 1965)- Circulation/ Geometry/ Project in context/ Open spaces/ Unit vs Project (aggregation of module). Photo available at: http://networksensibility.blogspot.pt/2013/09/diagram-geometry-logic-behind-net

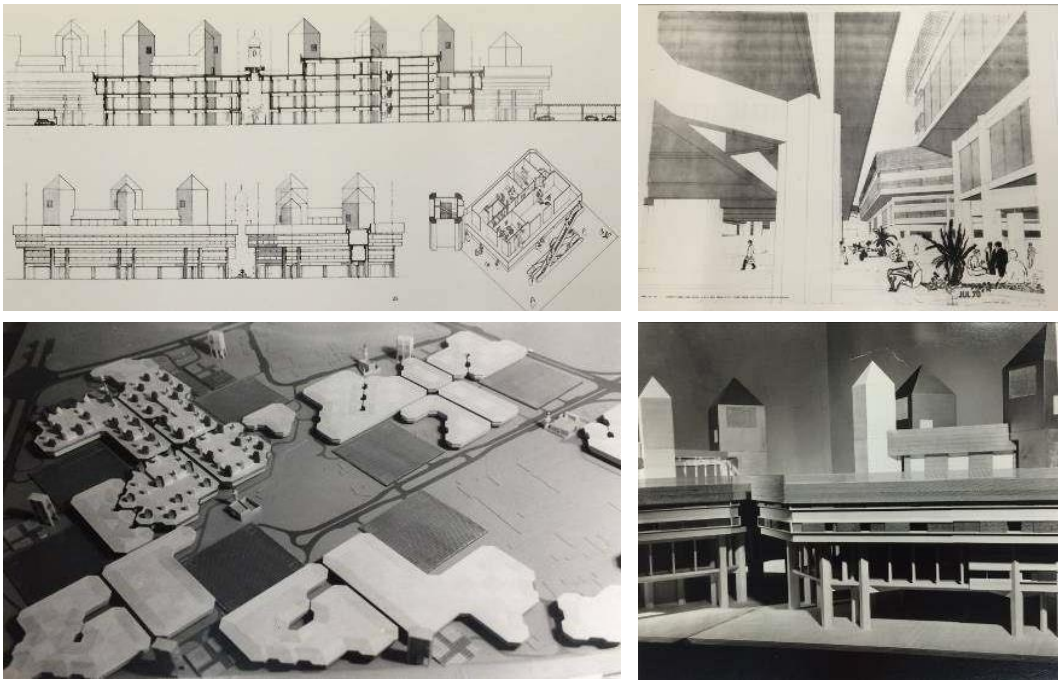


Fig. 80: Alison and Peter Smithson's 'Mat-building' concept-demonstration site, Kuwait. Source: Loeb Library, Harvard University.

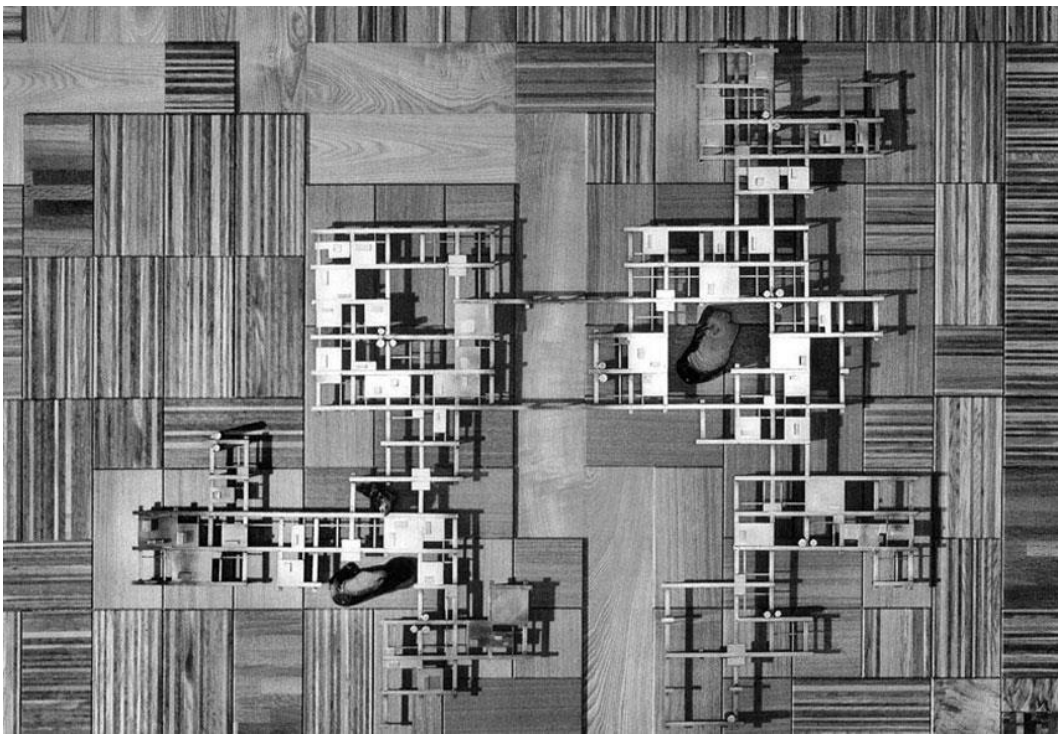


Fig. 81: Agricultural City, 1960 by Kisho Kurokawa. Photo available at: http://archeyes.com/agricultural-city-kurokawa-kisho/

In her quest to recognize and realize the notion of mat-building, Smithson elucidated the connections between the past and the present, the old and the new in different western and non-western architectural histories in an attempt to embody the continuity and express in mat-building. She stated:
"The way towards mat-building started blindly enough: the first Team 10 review of the field of its thought became collectively covered in the Primer (AD 12/61). The thought gradually got further bodied-out in projects, and these in the early 'seventies began to appear in built-form. At this point mat-building as an idea becomes recognisable. To be able to recognise the phenomenon at the end of this, its first, primitive phase, calls for a specially prepared frame of mind... Mainstream mat-building became visible, however, with the completion of the F.U. (Berlin Free University)" (Smithson 1974, 573).

However, mat-building strategy has re-taken its place in the contemporary discourse of sustainable architecture and urban development due to its efficiency and flexibility in enhancing the urban fabric, which enables it to find answers to a wide variety of problems confronting contemporary architecture (Sarkis 2001). Additionally, it forms a planning tool that allows the urban space to interplay and evolve and get built overtime (Avermaete, 2005). Recent implementation has appeared in Foster and Partners' sustainable planning of the Masdar City in Abu Dhabi (2007-2023). (Fig. 82).

Fig. 82: Masdar city plan by: Khalifa University of science, Technology and Research at Masdar Master Plan, 2010. Photo available at: http://www.sasaki.com/project/143/khalifa-university-of-science-technology-and-research-at-masdar-master-plan/

On the other hand, mat-building strategies offers important contributions to the sustainably built environment and urbanism in contemporary architecture, which is the reason why it started to regain attention in the recent discourse. In this context, Stan Allen explained the features and disciplines of mat-building in response to the contemporary challenges facing architecture and urbanism, he described mat-building as ; *"a shallow but dense section activated by ramps and double-height voids, the unifying capacity of a large open roof, a site strategy that lets the city and the landscape flow through the project, a delicate interplay of repetition and variation and the incorporation of time element as an active variable in urban architecture"* (Allen, 2001).

The strategy of mat-building is a process depending on the efficient use and planning of land, reflected in collective components growing a structure of a variety of forms repeated and set in a way that offers functional and flexible interactions (Forés 2006). Thus, creating a smooth flow between the urban fabric and the mat project represented in complexity of courtyards, pathways, platforms, and structures. This complexity transfers a sense of harmony and continuity within the urban environment and between the built and unbuilt expressing the ability of architecture in establishing the relationships beside the forms (Forés 2006). Thereby, it replaces the static architectural composition by generative forms with no restriction to their size and shape characterised by specific interactional associations that have the ability to transform sensitively to the local conditions and needs. Thus, mat-building strategy touches the time factor, as it offers flexible planning of variety of functions over time (Forés 2006) the matter which has been argued by Smithson; *"The systems will have more than the usual three dimensions, …. They will include a time dimension."* (Smithson 1974).

Moreover, the strategy relies on metrics and geometry as mat structures are generally large-scaled, highly-densified, and arranged on the basis of a rigorous modulated grid

which can be obviously noticed when looking at mat plans. The modular grid consists of different modular series repeated in both directions creating different compositions (Calabuig, Ramos, and Gómez 2013). (Fig. 83).

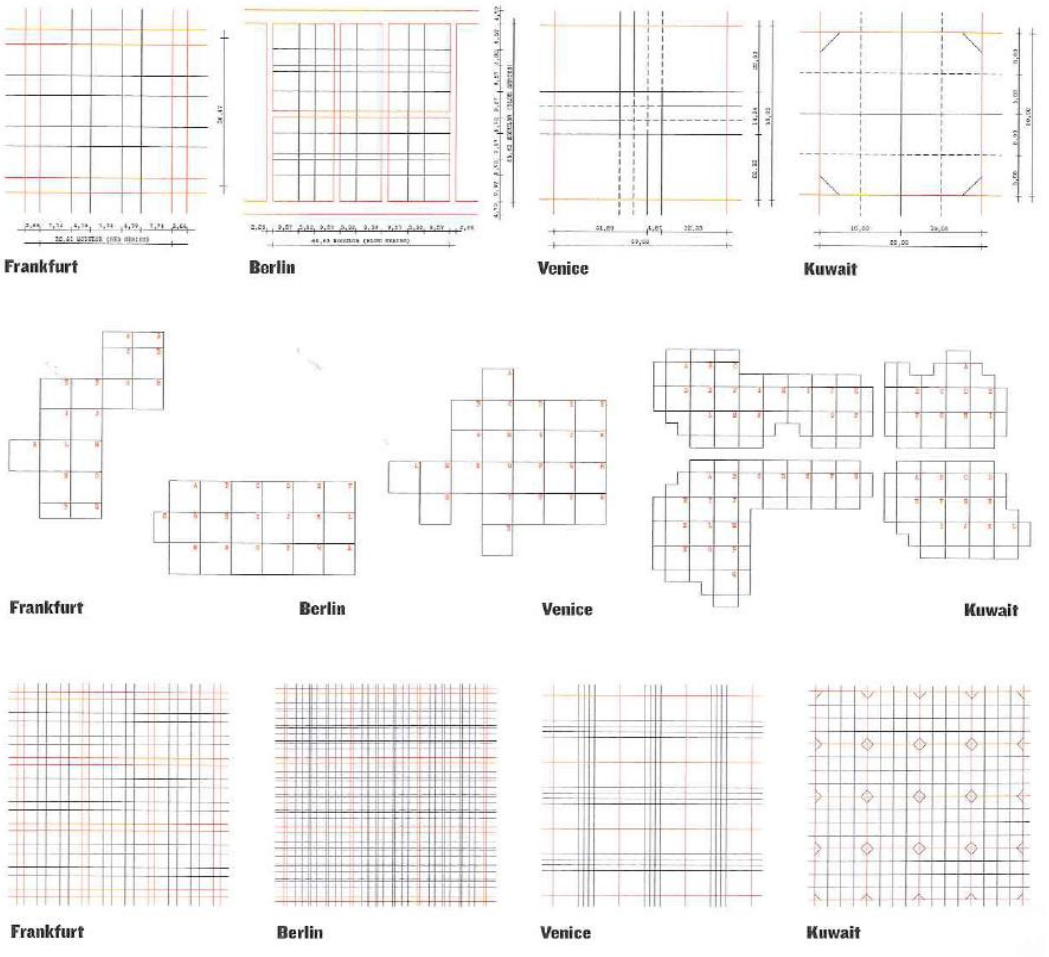


Fig. 83: Comparative modules and metrics for mat-buildings in Frankfurt, Berlin, Venice and Kuwait. Source: (Calabuig, Ramos, and Gómez 2013).

The strategy of mat-building has been adopted in many projects where it expressed the concerns of cultural identity and the functional interactions within urban life and between the inhabitants (Calabuig, Ramos, and Gómez 2013). It creates a dialogue with the urban place where it stands through establishing interactive relationship with the surrounding and a harmonious continuity with the environment, unlike skyscrapers which generate a kind of segregation and isolation within the urban space as Woods maintained when describing the Free University of Berlin as a "ground scraper". This organisation offered by "ground scraper" allows for greater interactions and community possibilities (Calabuig, Ramos, and Gómez 2013).

In the end, mat-building strategy expresses a genuine example, as reviving vernacular architecture could be a basis of inspiration to produce solutions and find answers to the contemporary challenges after decades of discarding (Itma 2016). Learning from it could become a valuable resource in facing the challenges of post-war reconstruction in Syria. Through creating a new housing typology which fits the contemporary needs and linking them to the historic roots of the area, a continuity of preserved identity that consolidates the socio-spatial relationship between the people and their urban space can be established and strengthened.

1.4. SUSTAINABILITY AND CIRCULAR ECONOMY

Resource efficiency and circular economy in the construction sector have been recently attracting worldwide attention as a topic aimed towards sustainable urban development, which focuses on incorporating economic, environmental and social aspects within a multidisciplinary long-lasting process to address the constantly changing needs and values of urban environments and communities. The Construction industry is considered the number one consumer of global virgin resources and raw materials, as it consumes 40% of the global energy and resources in addition to the harmful environmental effects represented in the release of one third of the global greenhouse gas emissions (GBC Finland 2017) which results in the risk of resource scarcity.

There is a huge global interest in designing future buildings on concepts of resource efficiency, adaptability, and circular economy in order to enhance the productivity of global construction industry, save costs, increase building capacity, improve resources proficiency, foster innovation and job creation opportunities, and enhance the sustainable development process. Different projects in Europe were launched to define and suggest concepts and proposals around this matter, such as the BAMB project which suggests new concepts and business models to build upon reversibility in buildings considering them as material banks.

Another EU project is HISER project; the main objective in HISER is to develop and demonstrate novel cost-effective holistic solutions (technological and non-technological) for a higher recovery of raw materials from ever more complex construction and demolition waste (C&DW) by considering circular economy approaches throughout the building value chain (from End-of-Life Buildings to new Buildings). The HISER project goals are to design, develop, and optimize advanced cost-effective technologies for the production of high-purity raw materials (purity levels ranging from 80 to 100%) from complex C&DW, and to develop and optimize new cost-effective building products through the partial replacement of virgin raw materials by higher amounts of secondary high-purity raw materials recovered from complex C&DW.

This trend generally focuses on the rehabilitation of existing buildings and the construction of new buildings as the circular use could be incorporated within the initial stages of the design phase. Similarly, we can derive some benefits from this model in the reconstruction process in Syria. During the years of the devastating war, massive amounts of waste and structure debris have been generated, particularly in the city of Homs, almost two thirds of the building stocks have been destroyed either completely or partly, leaving great amounts of debris, ruins, and materials' scraps. This waste needs huge costs to be removed, transported and disposed.

As an outcome of the war, buildings became uninhabitable but still, their leftovers contain plenty of components and materials in good conditions to be recycled or even reused in the post-war reconstruction process. These debris and destruction leftover materials can be used through a circular model in the new reconstruction process after the war which will definitely have environmental, economic, and social advantages that reinforce the sustainable development in post-War Syria. These advantages are represented in less waste production, saving and preservation virgin resources, and reducing energy consumption on the environmental level. Moreover, other benefits can be seen in fostering the reconstruction and recovery process by reducing the costs and thus, accelerating the entire process and offer houses for a larger number of returnees within shorter periods. Coupled with increasing sustainability since putting the resources back into the local economy will enforce it by stimulating new investments in local business which creates local jobs opportunities and involves the locals within the construction process, which could have plenty of advantages in their social and psychological recovery as we mentioned in the previous parts of this research.

Also, building upon the old foundations, reusing undamaged structural and non-structural components in the original building would save considerable costs and time, since there are many foundations and parts of the damaged building still in good conditions and can be put to use by applying conventional laboratory and in-situ testing methods to evaluate their reuse potential which would form a sustainable solution in return instead of clearing the land and starting from a zero point. In the end, high quality reuse and recycling of materials has been considered as a multidisciplinary task that needs to involve technical, organisational, legal and financial aspects.

Circular Economy Proposal

Fig. 84: Circular Economy Proposal.

2. PROJECT PROPOSAL

Objectives

What are the primary needs that this project will fulfill?

The main factors that the project compromises are time, cost, and quality; the project is subjected to these factors trying to find a balance between these three priorities.

The main goal of the project is contributing to the reconstruction process of the city, by proposing a strategy to provide decent accommodation to as many as possible of the returning people after the war end in the city of Homs to re-establish their normal life. This accommodation forms the basis of the permanent reconstruction process that evolves step by step to eventually become a part of the urban fabric of the city. Additionally, the proposal aims to involve the affected-families in the reconstruction process of their homes to gain their acceptance beside other benefits that have been discussed in the previous parts of this research.

Site selection

As addressed in the previous sections of the research, there are two possibilities to choose the site of temporary accommodation:

1. **Selecting the site in a remote empty land in the outskirt of the city**

Advantages: more freedom concerning the design and planning.

Disadvantages: land rights issues, creating new housing complexes, establishing new infrastructure.

2. **Selecting the site in a destroyed neighborhood**

Advantages: existing infrastructure of the old structures.

Disadvantages: restrictions in the design and planning.

Considering that there is a huge need to reconstruct the destroyed urban areas within the war-torn city of Homs, building in the outskirt of the city doesn't make sense as the project's goal is to contribute in the city reconstruction process. Besides, assuming the incremental strategy in our proposal makes the second option seem more proper. Thus, we chose Jouret Al-Shayah neighborhood as it is one of the biggest neighborhoods in the city which has suffered severe damage in most of its parts.

Jouret Al-Shayah

Jouret Al-Shayah is one of the biggest neighborhoods in the center of Homs, it consists of a combination of residential and commercial buildings in its northern part, alongside several private firms and commercial buildings in its southern part. It has a central location amongst several important neighborhoods in the city. The neighborhood has a population of 16.816 including a mixture of cultural and financial classes according to statistics from 2004.

The neighborhood went through several violent actions during the Syrian revolution. It was subjected to sieges from 2012 to 2014, which led to severe damage in the majority of its parts, and its population was completely displaced during nearly two years of siege (TSI and PAX 2017). In august 2016, UN organizations conducted some efforts to clear debris from the neighborhood.

Project description and methodology

The proposal concerns a plot of land to implement a pilot project that can be considered Later in the other plots of the neighbourhood. It starts with analyzing the actual context and circumstances of the selected neighborhood; by looking at different systems, the project proposes an efficient way of building to promptly accommodate as many of the returners as possible. This goal is achieved by employing the incremental housing strategy through providing a complex of housing units that reflect the residents' basic needs; these connected units have the ability to expand within clear limits through a community-driven process that involves the local affected-families along with the responsible authorities that set the guidelines of the process in monitor its implementation.

The strategy begins with providing a simple layer of structural elements (columns and slabs) coupled with providing the vertical connection elements that ensure the accessibility to the core units, basing on a mat net. The core units are relatively small, and there are two types of units according to the size of the target family. Each unit consists of a living space with facilities (kitchen and bathroom). These units form the core of the permanent housing reconstruction process as they evolve incrementally in time by their residents with no specific time line, rather according to their needs and capacities. The units have fixed walls alongside other removable ones to be replaced through the expansions. As these units have defined dimensions, the construction process considers other aspects that must be addressed in the permanent reconstruction, achieving this by expressing the vernacularity in the development of the units in time through providing private patios to each housing unit beside the main patio of the complex in the ground floor, and other two small patios in the first floor where the community of the building can hold meetings and social activities. The

distribution of the shared patios coupled with the private ones allows the movement of air currents through the housing units providing natural ventilation.

The ground floor is destined to be empty in the first stage of construction to be repurposed later to employ commercial functions represented in shops distributed around the patio leaving an entrance to the patio and vertical connection elements to the housing units. The ground floor creates a horizontal ground connection with the other patios in the neighborhood generating a ground level expansion throughout the entire neighborhood that provides social and commercial interactions, by creating different compositions of the patios and the shops surrounding them.

The proposal draws the conceptual lines of a housing approach that could be analyzed and elaborated in more detail in the future to be implemented in the selected neighborhood or/and other neighborhoods in the city.

Materials

The primary building materials considered for the project will be drawn from the recycled debris of the destroyed original structures, by tracing the outlines of the original structures in the selected plot to determine the components and infrastructure in good condition to be incorporated in the proposal.

Target group

The target group is the original residents of the neighborhood, with priority given to the people living in inadequate quality relief accommodation where they have been forced to stay longer than intended during their displacement due to the war which caused the destruction of their homes.

It should be considered that the target families are relatively conservative and greatly value their privacy. This has been addressed by providing strategically placed private patios in the final layer of the expansions so as to provide every residence with an open space that still preserves the intimacy and privacy of its inhabitants.

Jouret Al-Shayah, Damage Assessment Map

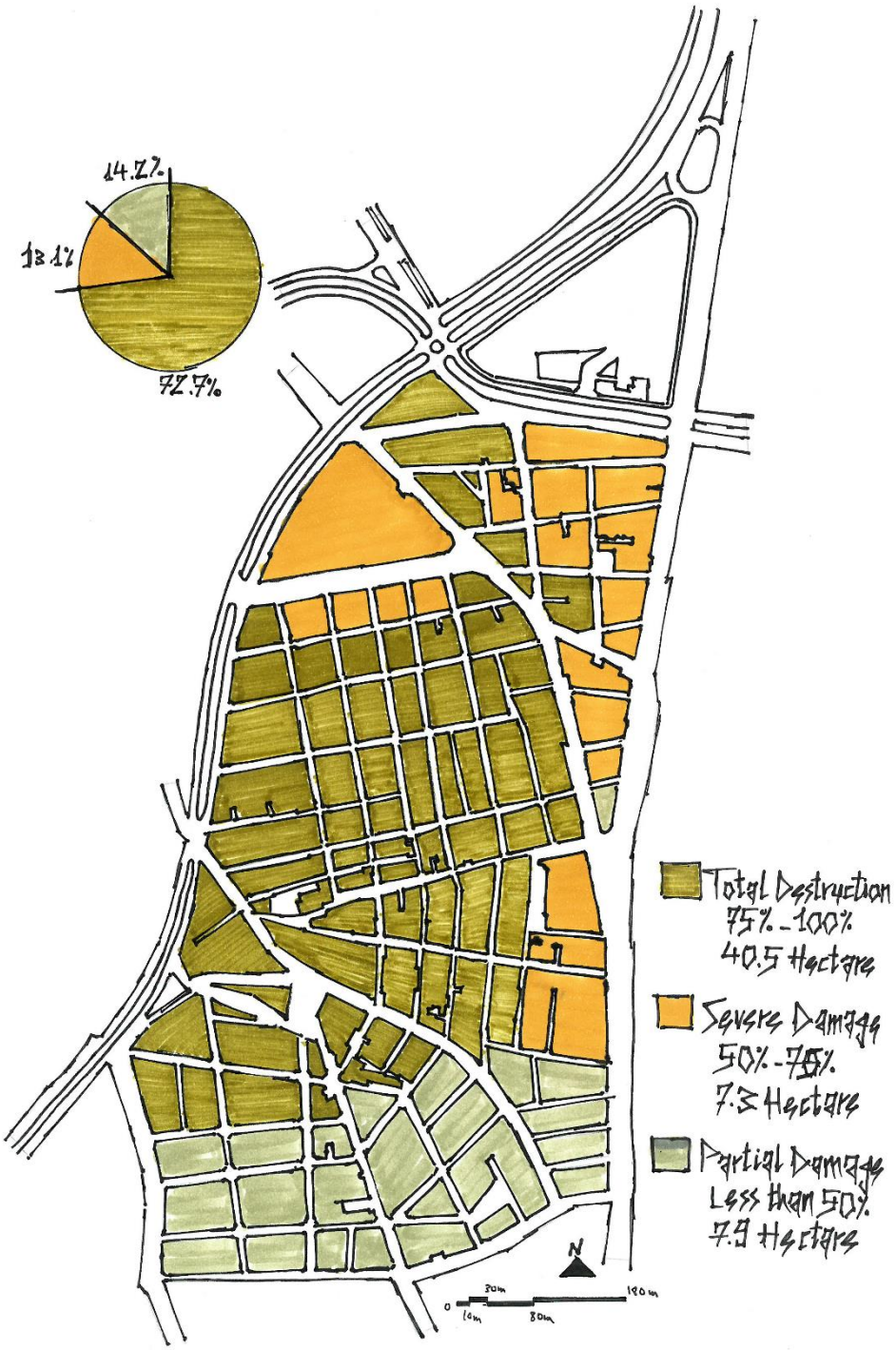


Fig. 85: Jouret Al-Shayah, Damage Assessment Map.

JOURET AL-SHAYAH DAMAGE OVERVIEW


AL-KORNICHE STREET


AL-KORNICHE STREET


AL-KORNICHE STREET


AL-KORNICHE STREET


AL-AMAL HOSPITAL


AL-KORNICHE STREET


AL-WALID STREET


MIMAS STREET


SALAH AD-DIN AL-AYUUBI STREET


COMERCIAL TOWER


OUMAR BIN AL-KHATTAB STREET


ABDOUL MOUMEM RYAD STREET

100 M 300 M

Jouret Al-Shayah, Built Space Map

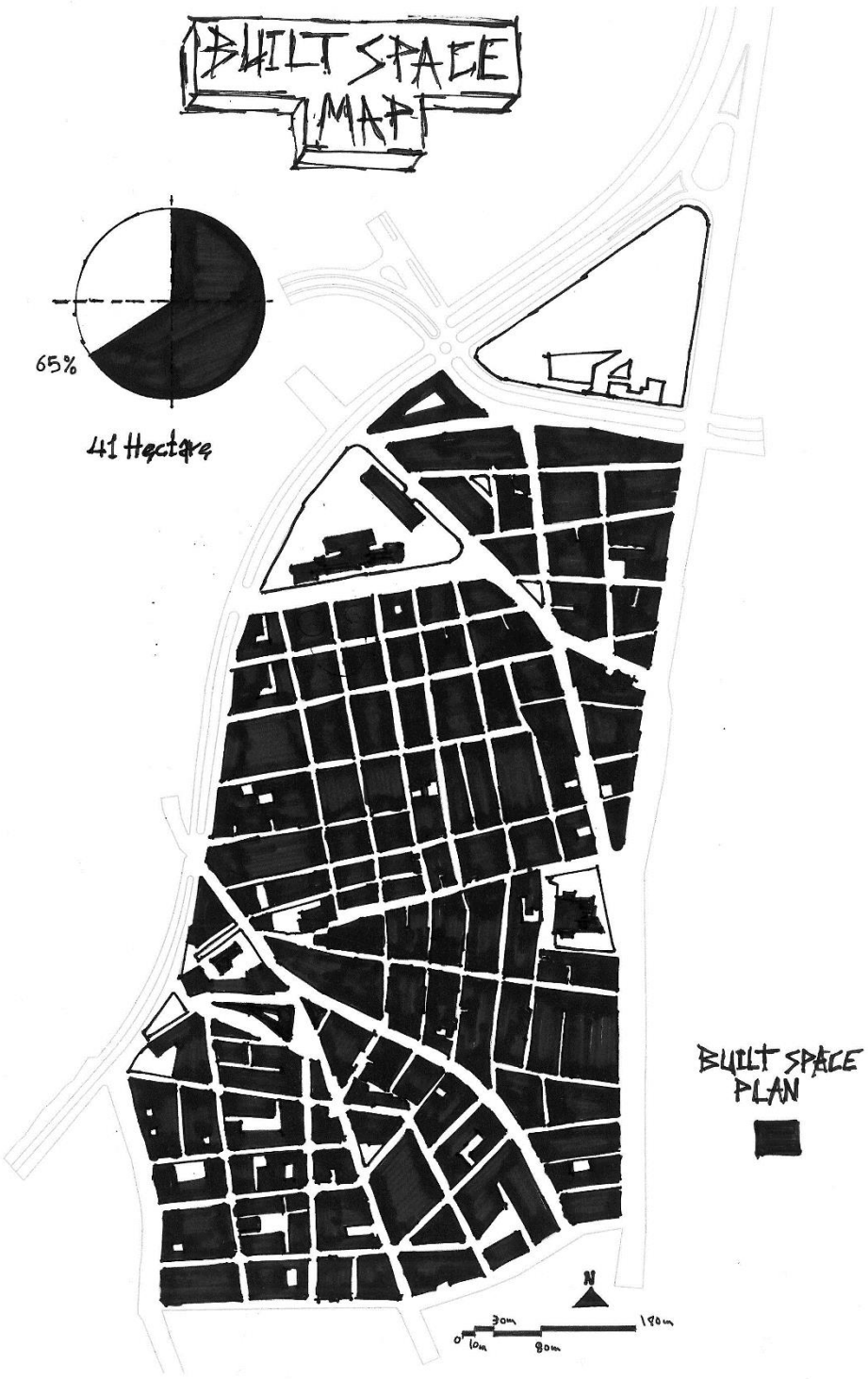


Fig. 86: Jouret Al-Shayah, Built Space Map.

Jouret Al-Shayah, Land Use Map

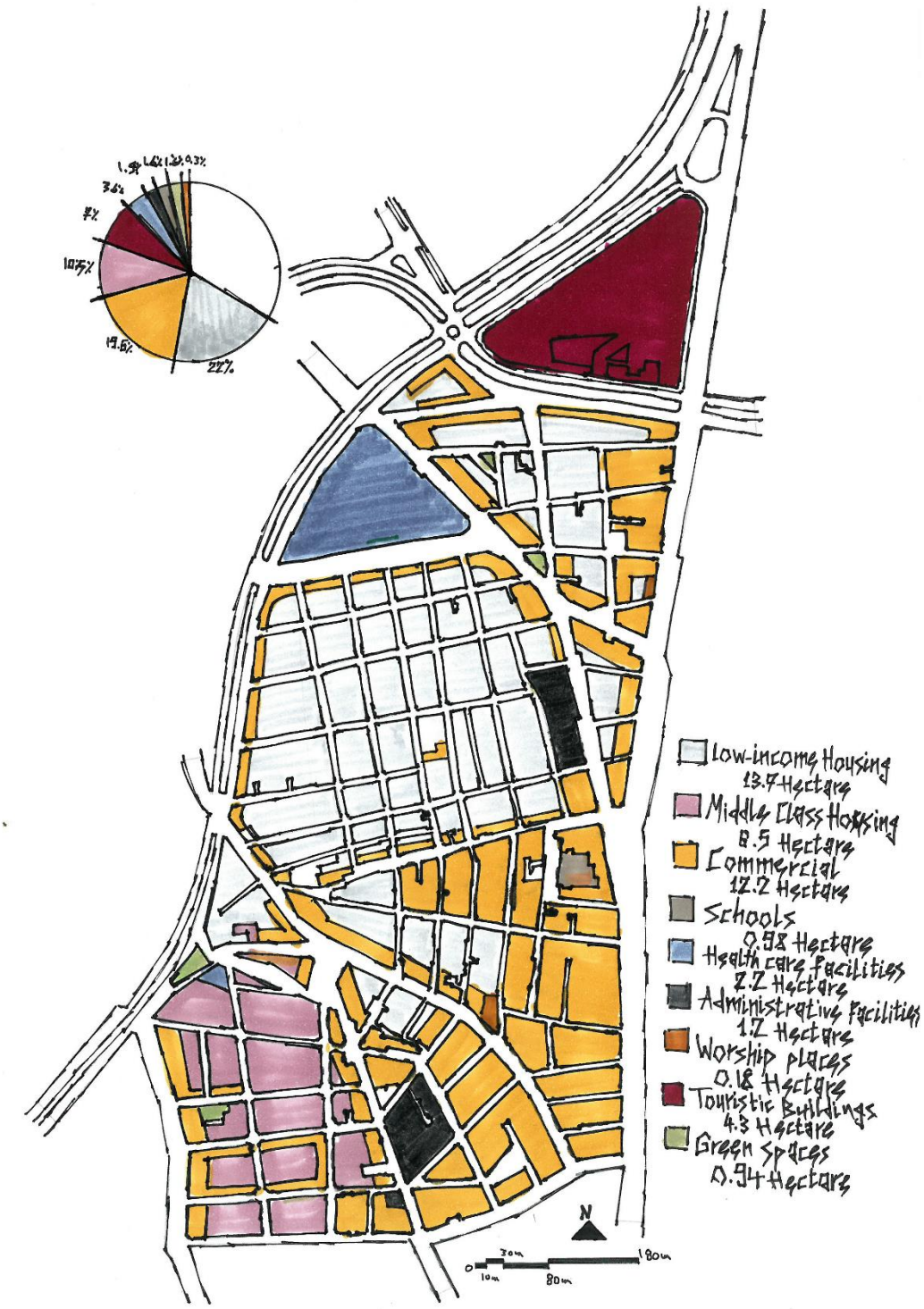


Fig. 87: Jouret Al-Shayah Land Use Map.

Jouret Al-ShayaH, Roads' Network Map

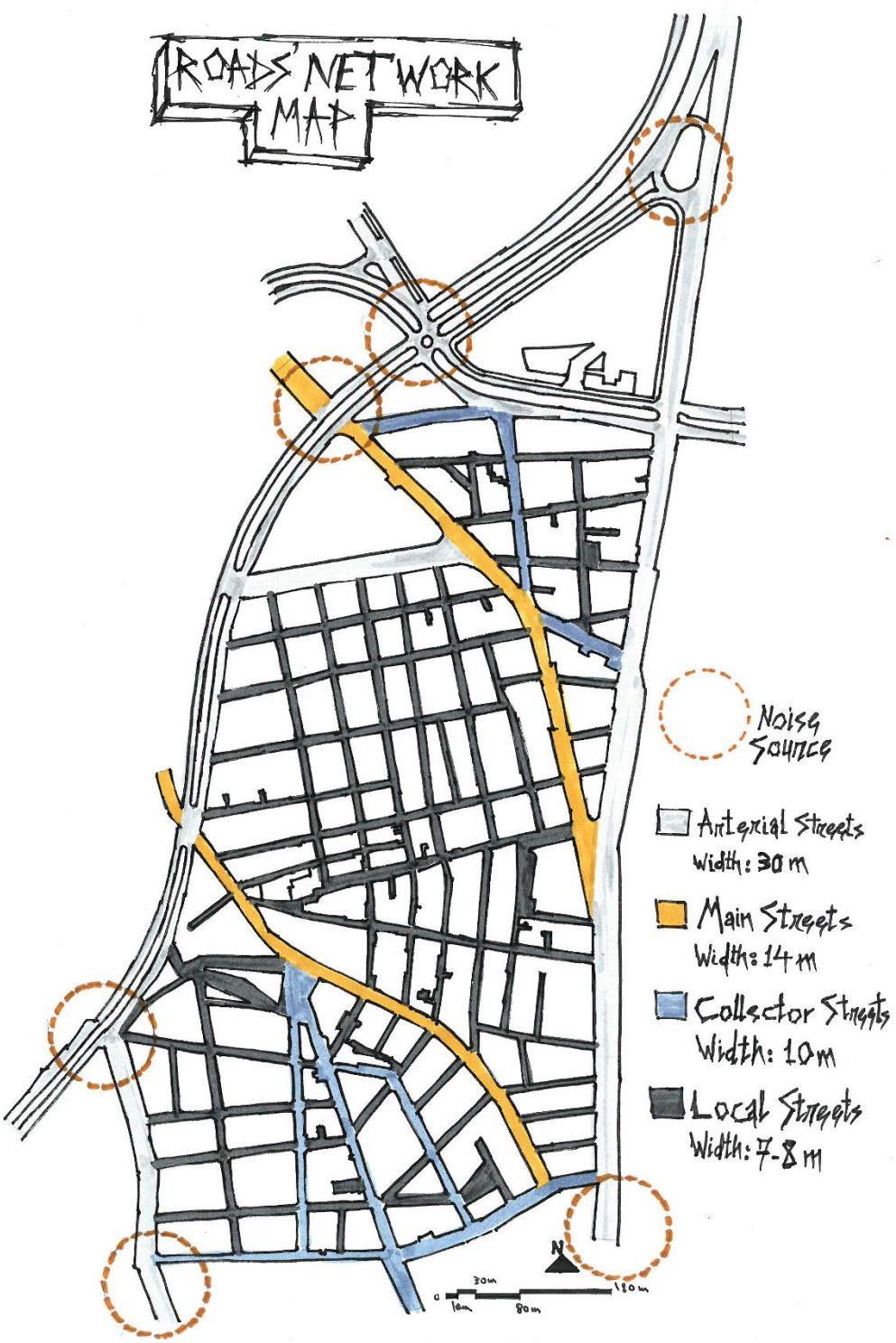


Fig. 88: Jouret Al-Shayah, Roads' Network Map.

Jouret Al-Shayah, Building Height Map

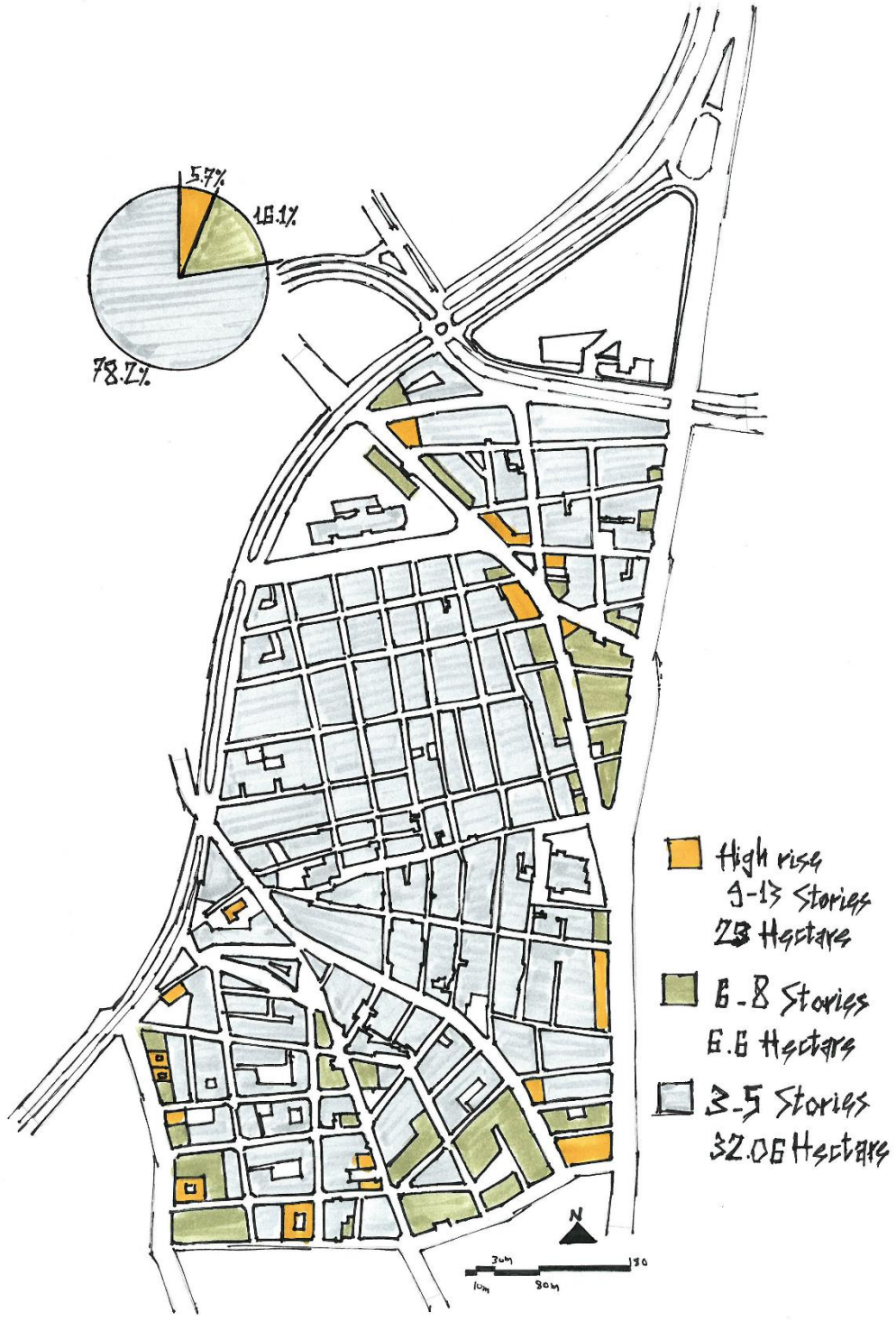
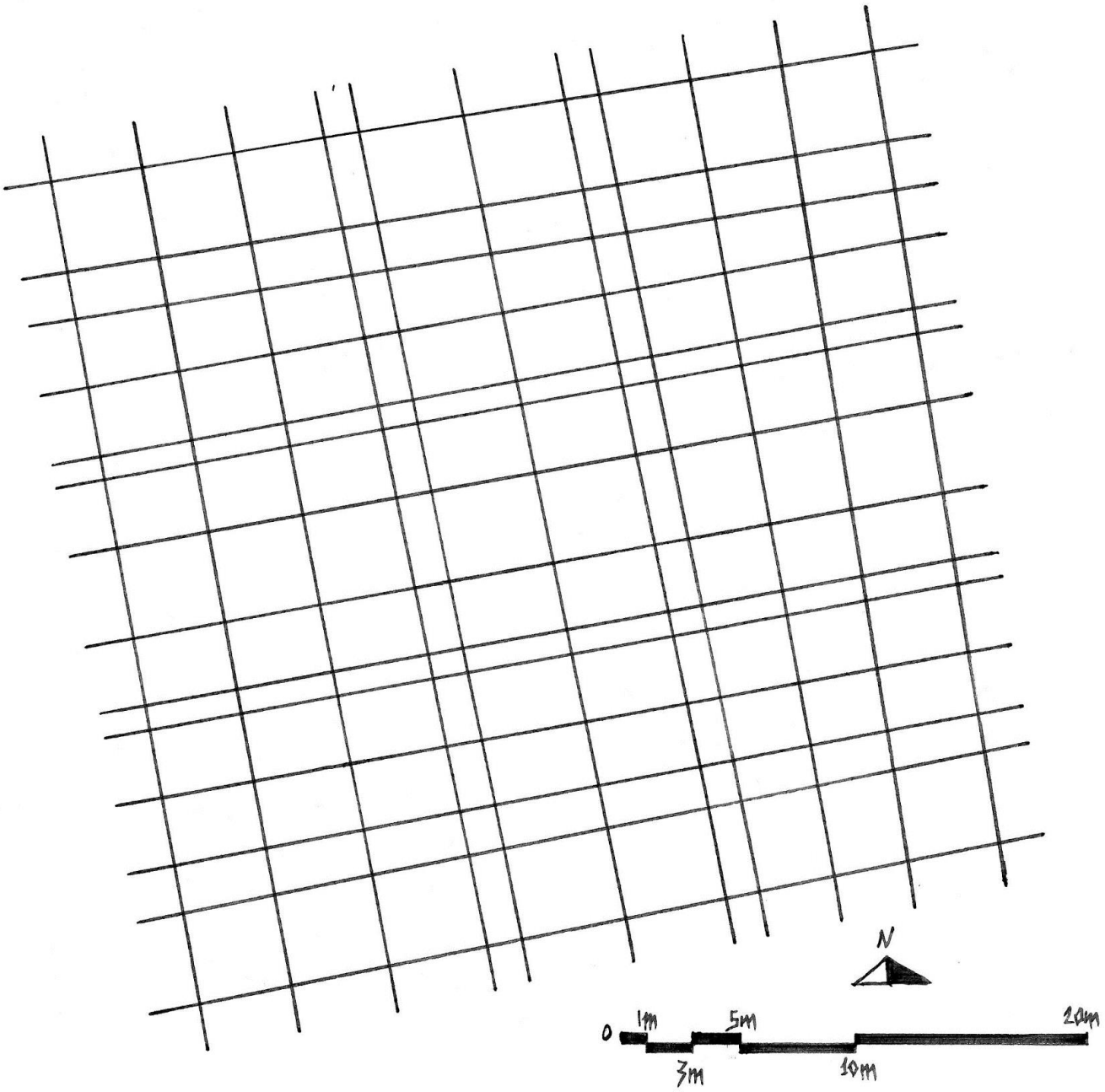


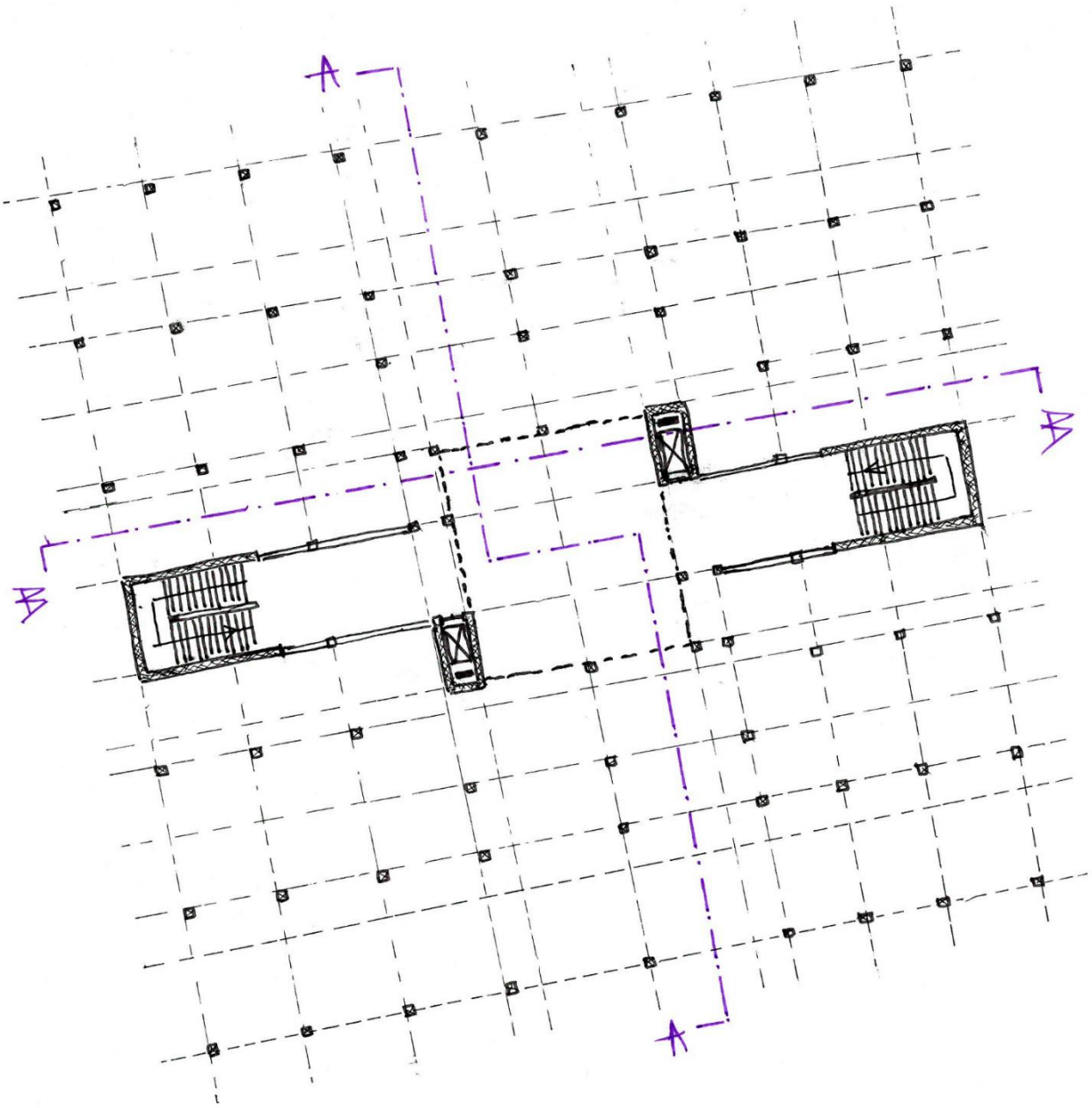
Fig. 89: Jouret Al-Shayah, Building Height Map.

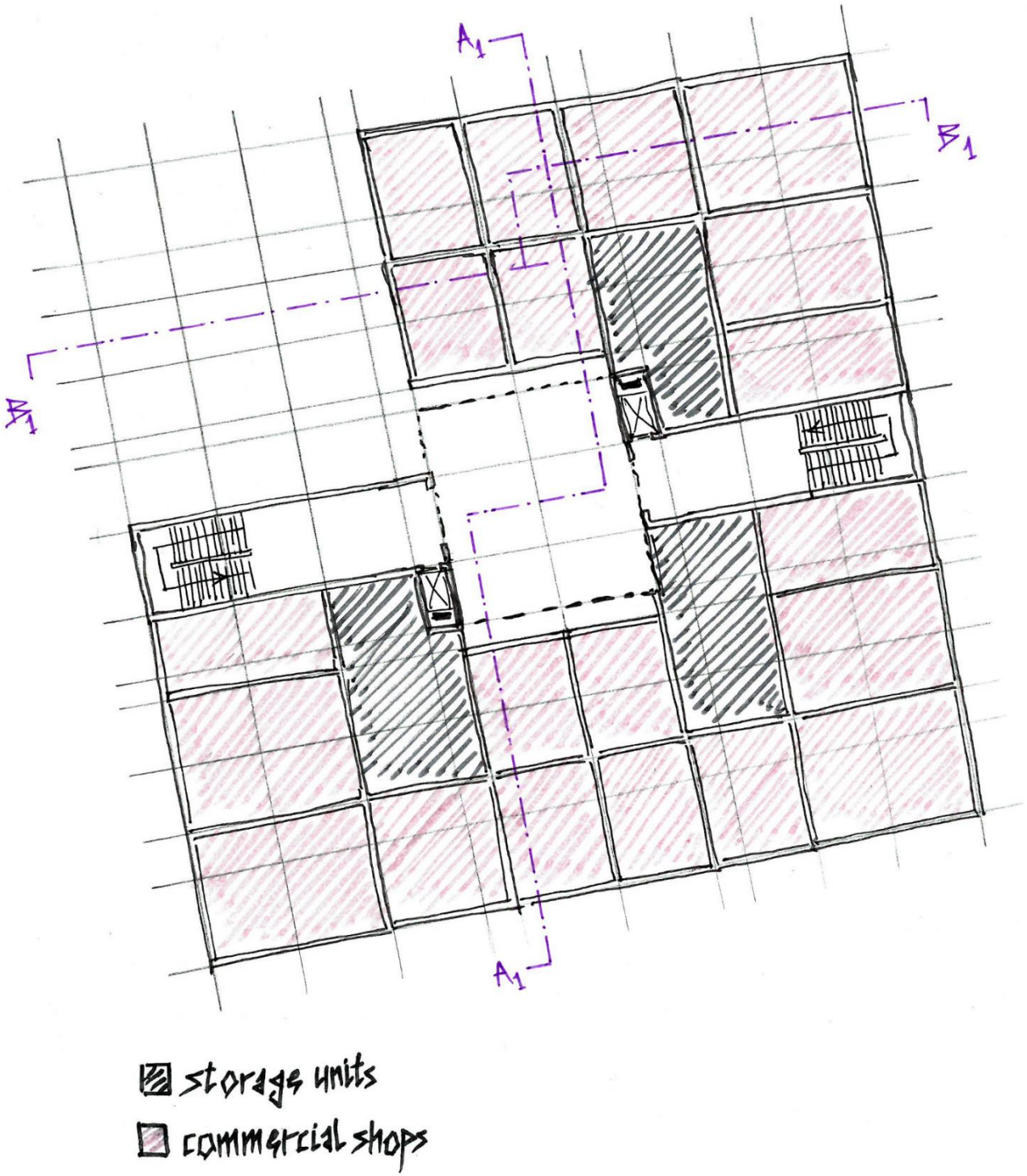
Intervention Plot

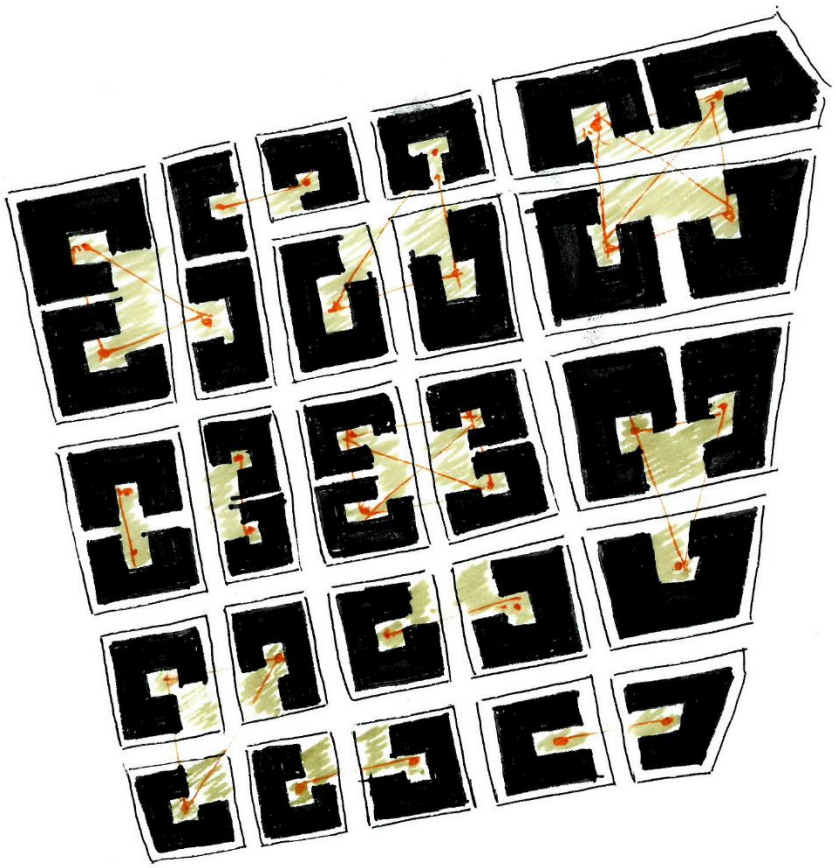
Fig. 90: Intervention Plot.

1. The Mat Net
2. The ground floor with structural system and vertical connection elements
3. The imagined final result of the ground floor to be employed with commercial shops and storage units for the residents.


N
0
1m
5m
20m
3m
10m

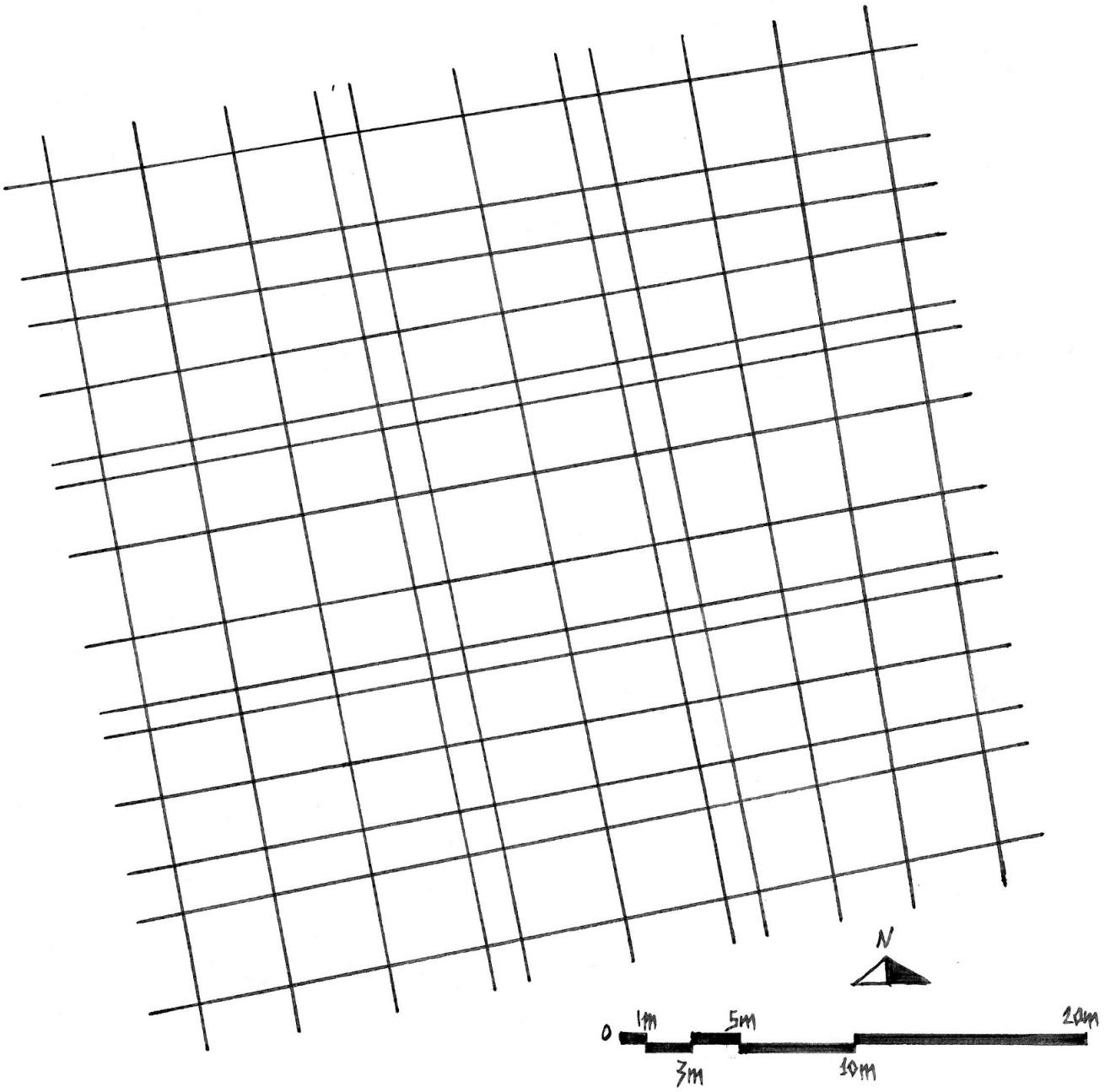

A
B
B
A

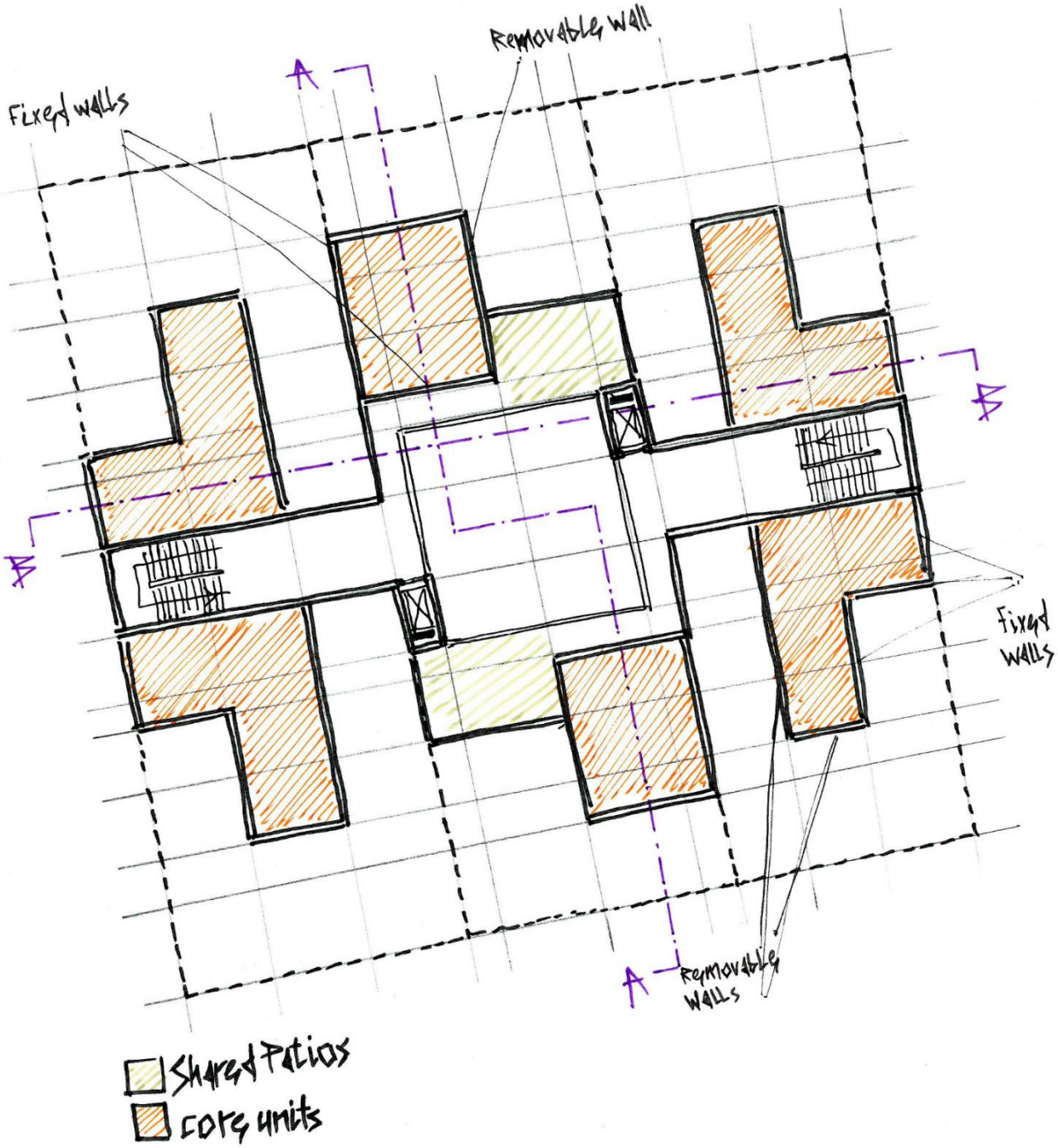

A1
B1
B1
A1
storage units
commercial shops



Urban View of the compositions of the blocks' ground floors.

1. The Mat Net
2. The first floor, initial layers of the core units
3. The first floor, final layer of expansions with the patios

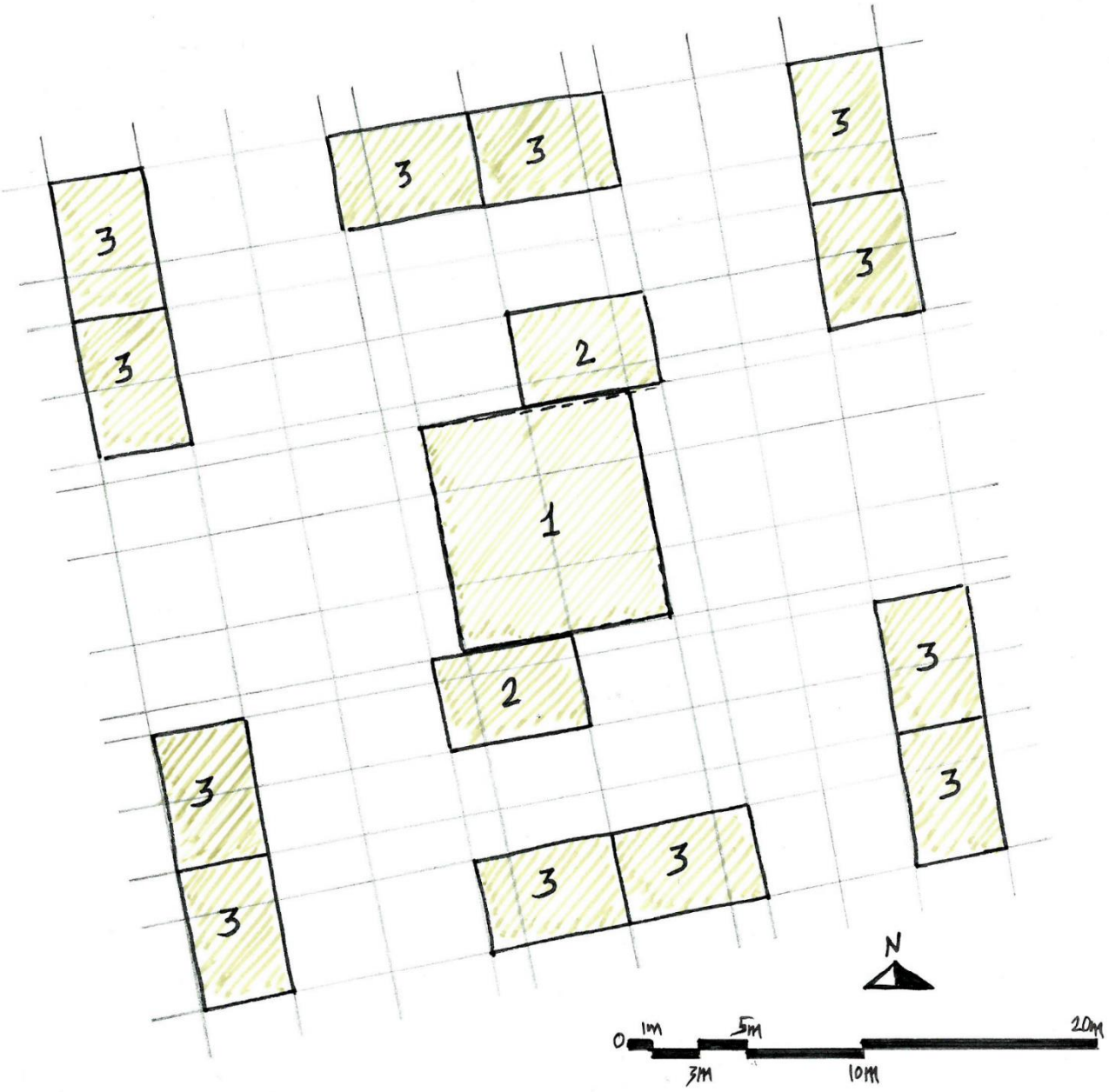

N
0
1m
5m
20m
3m
10m


Removable wall
Fixed walls
A
B
B
Fixed walls
A
Removable walls
Shared patios
core units

Private Patios

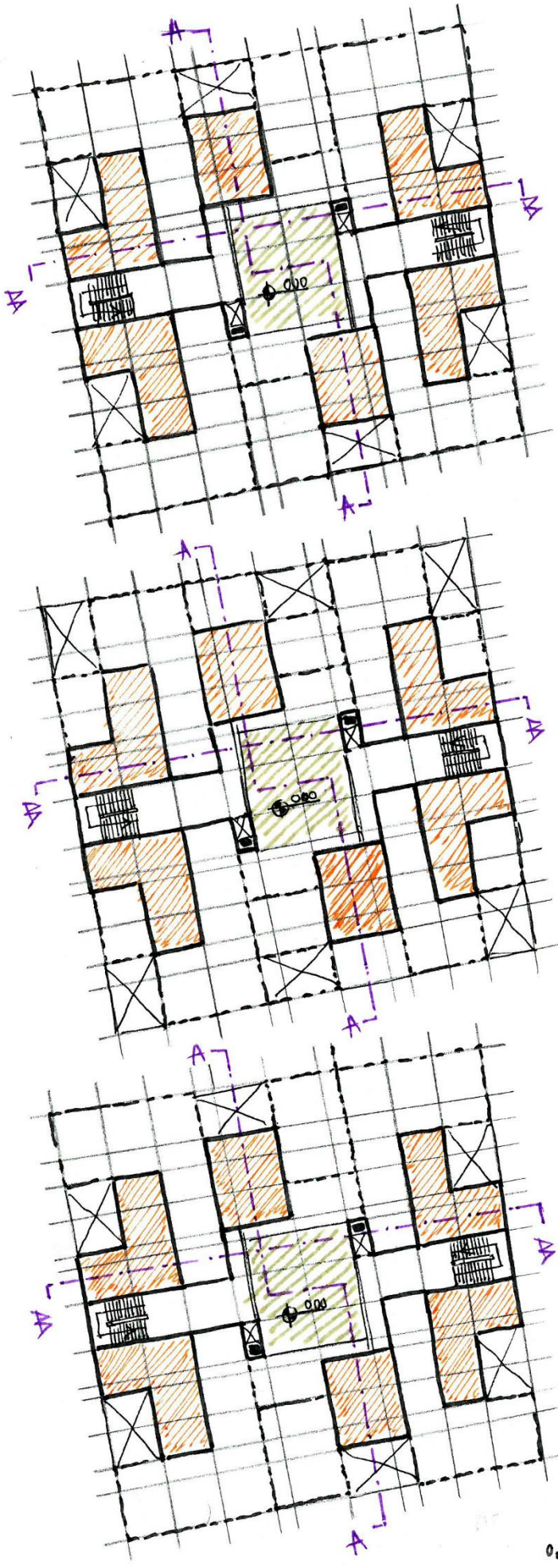
→ Air currents

Patios Distribution on The Mat Net



1 public patio
2 shared patios
3 private patios

1. 2nd, 3rd, and 4th floors of core units (considered according the numbers of the families in need for accommodation)
2. 2nd, 3rd, and 4th floors, final result



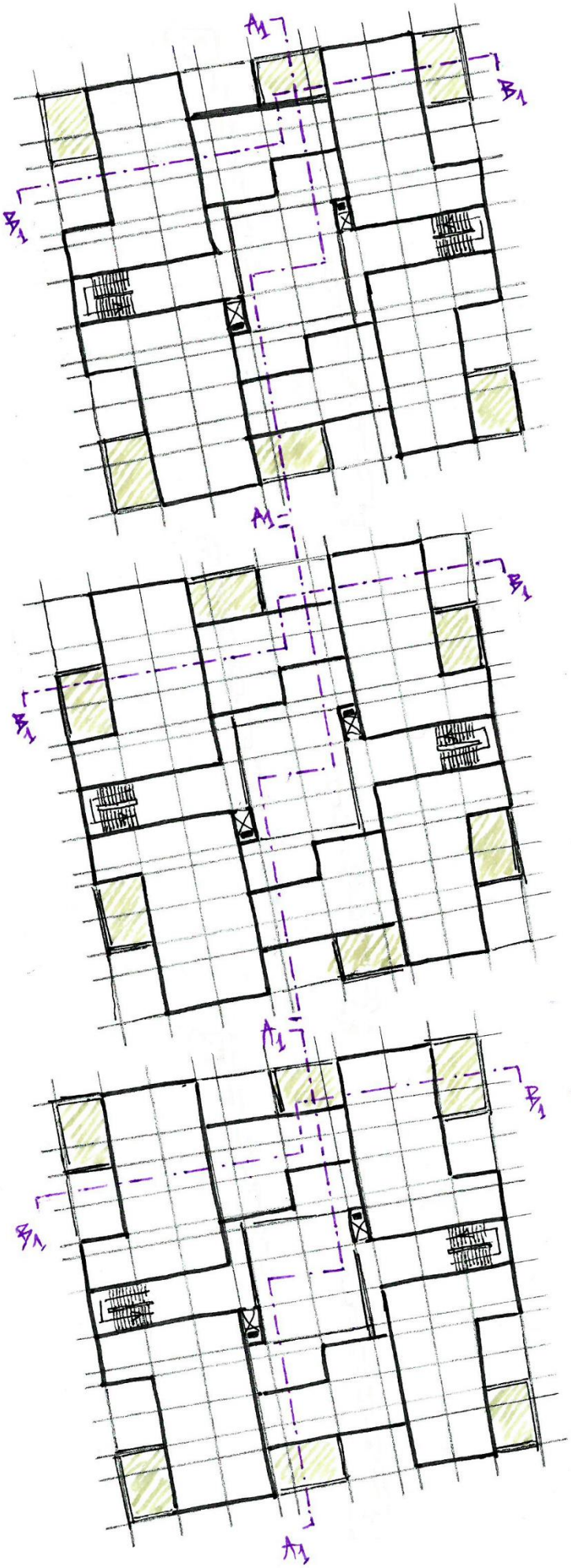
Core units

Public Patio

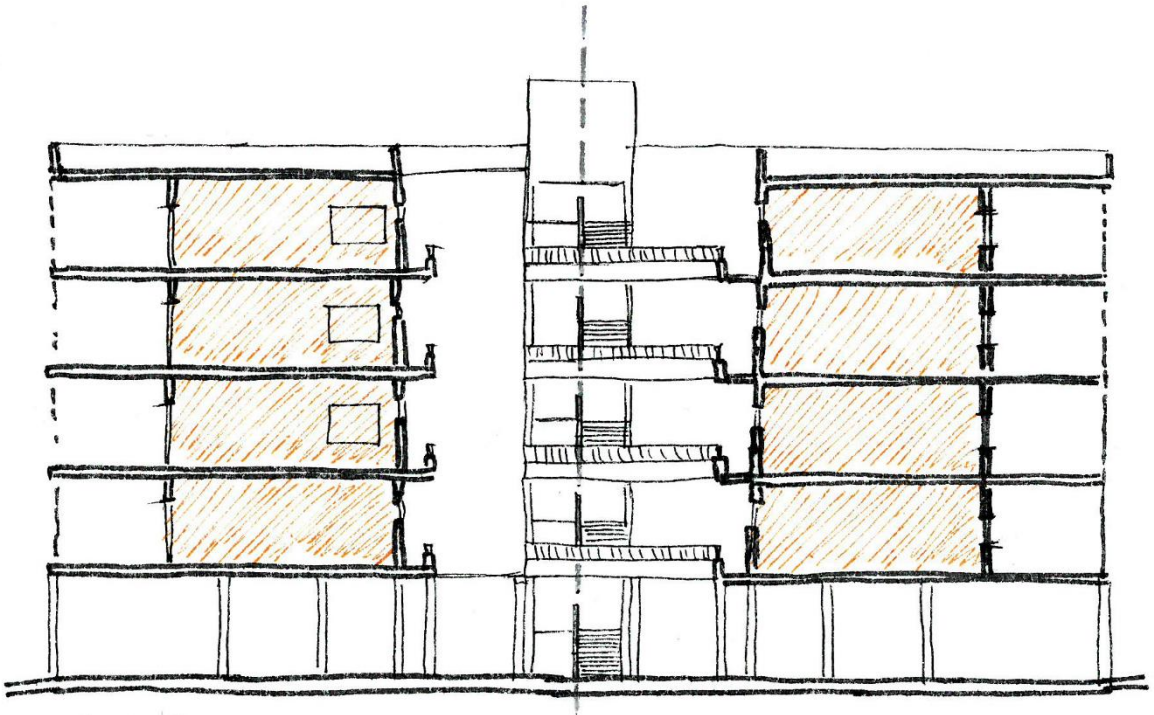
N

0 1m 3m 5m 10m 20m

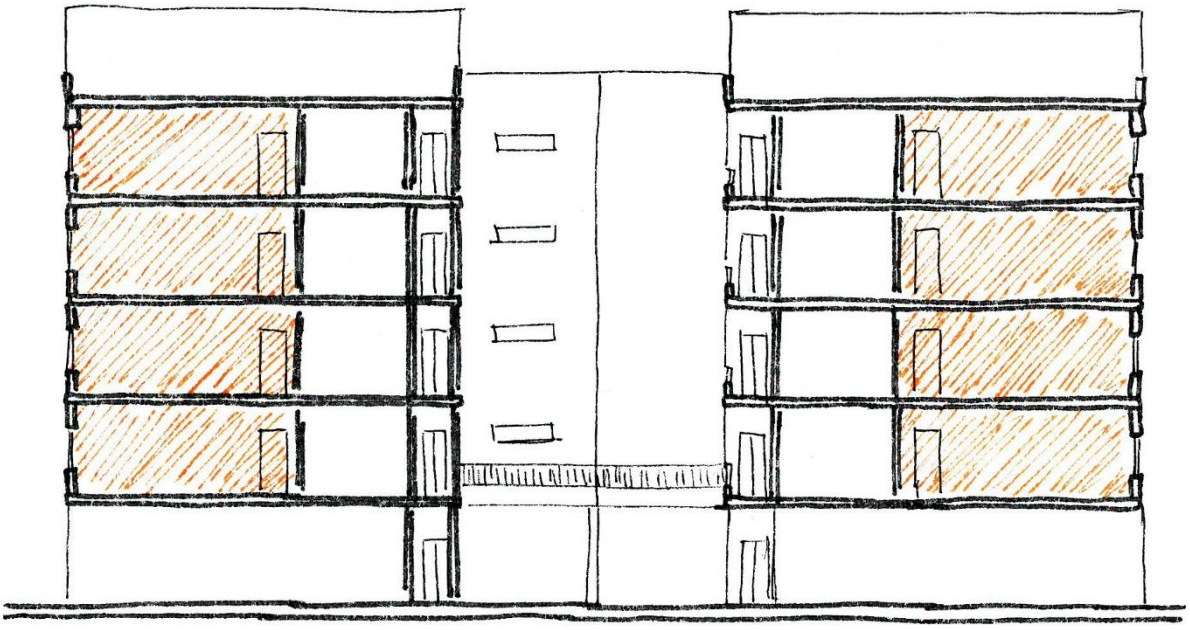
1. Sections of the initial layer of the core units
2. Sections of the final layer of expansions



Private Patios

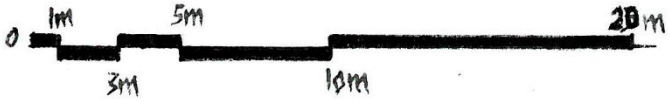


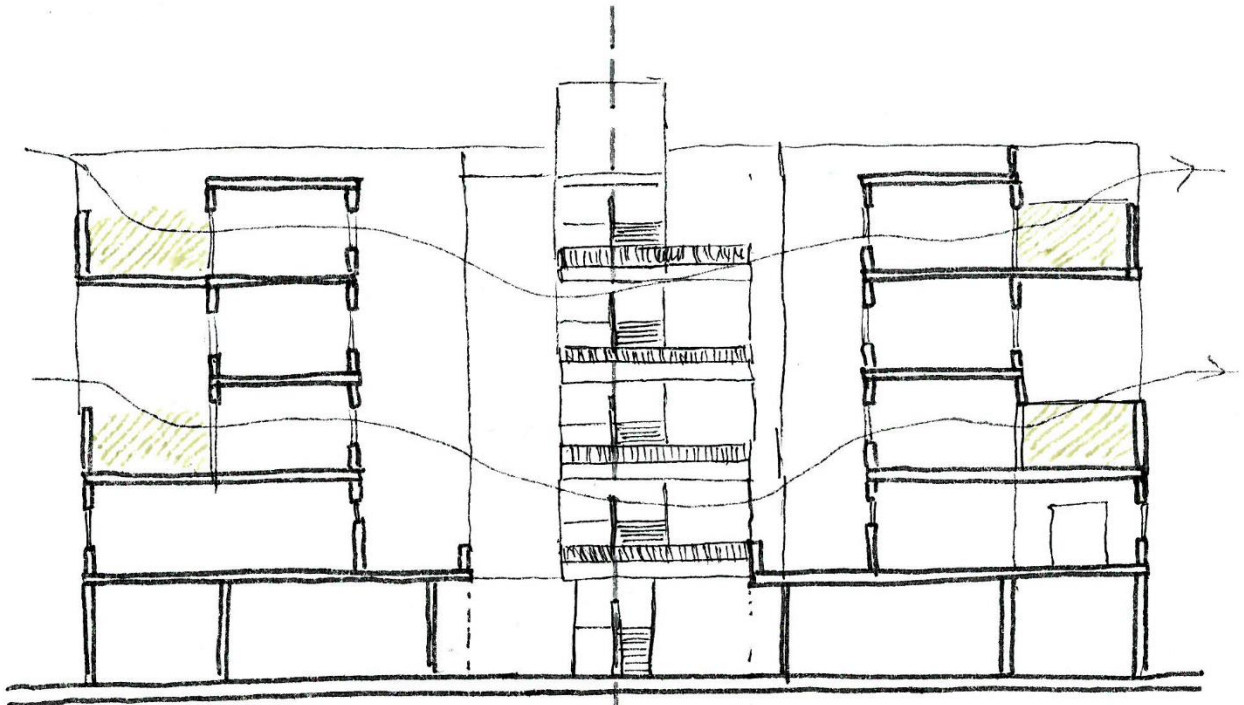
Section A-A



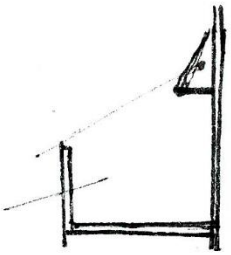
Section B-B

Core units

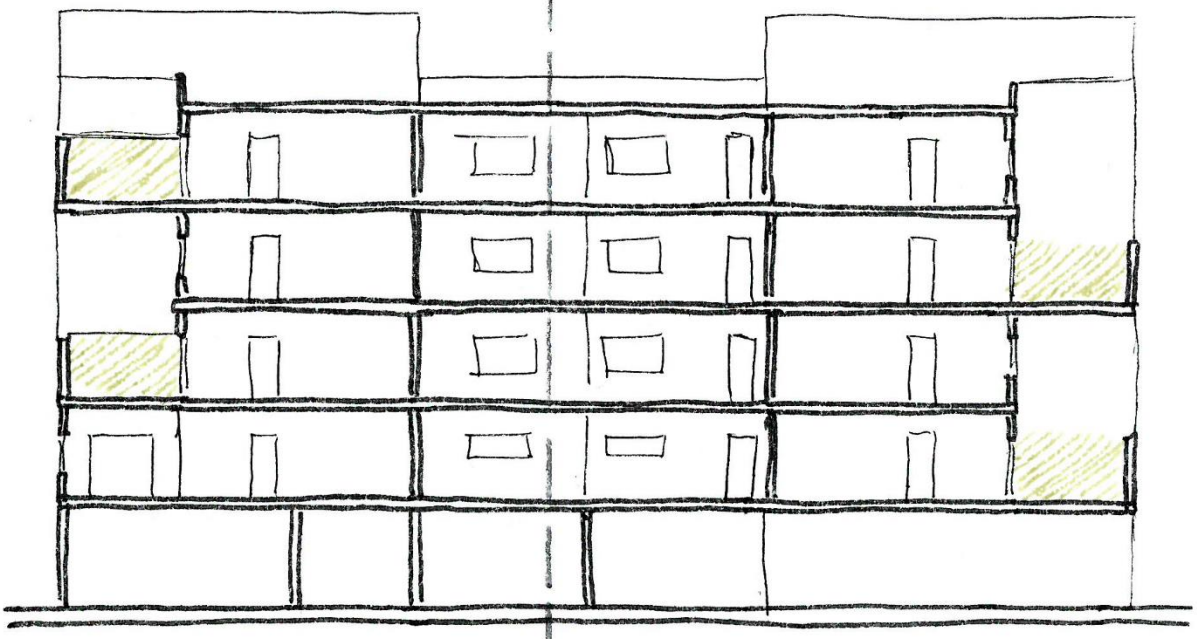




Section A_1-A_1



Private Patio



Section B_1-B_1

Private Patios

CONCLUSION

In conclusion, to find the most proper temporary accommodation alternative, a balanced compromise should be achieved regarding the cost, performance, durability, timeliness, cultural convenience, technical parameters, and building technologies. Besides, it must be kept in mind that each case is unique (Johnson 2002) and studying the considerations and analyzing the variable and factors define the contextual frame of each specific case in order to adopt the most proper solution for each context which represents different conditions and circumstances of the aftermath of war or disaster. Therefore, it should not only study the housing units as blocks standing by them self, but the whole context from the site scale to the unit scale. More importantly, the selected alternative should address the specific needs of the target community. for instance, war-affected communities pay more attention regarding their cultural, religious and social values and this should be reflected through the design. Moreover, the safety and security are vital for them in the recovery process after the violence they have witnessed through the war.

Drawing on the literature review, temporary housing has been widely criticized for being unsustainable in terms of cultural inappropriateness and economic viability. Moreover, the units generally last more than intended and thus, they have a tendency to become permanent. This has some future effects over the afflicted city's appearance and its urban fabric; therefore, it must be planned from the beginning considering its prospective durability. The sustainability of temporary housing units questions the destiny of these units after their interim use for temporary accommodation, in other words, their latter use after they are no longer considered for temporary accommodation.

In this context, incremental housing strategies have been adopted as an alternative that replaces the stage of temporary housing, as they incorporate both the concept of temporariness of temporary housing phase and the permanency of permanent housing phases within a complementary process that bridges over the two phases, along with its other beneficial aspects of being sustainable as it saves the resources to be invested in the temporary construction and instead incorporate them in the permanent construction.

One fundamental aspect that incremental strategy embraces is that it holds social perspectives and values, since it provides an affordable housing solution that addresses the devastation of the war and the economic vulnerability of war-affected people and with protects them from experiencing the stressful transitional living resulted from moving between various stages and types of accommodations. Thus, it concerns their psychological recovery alongside the physical one. Moreover, incremental strategy offers a field where people can interact, re-establish their social networks, and regain

their sense of identity and affiliation to their city and homes as they actively participate in the reconstruction process. This participation of the local authorities and civil society in decision making is elemental in the success of the process, as it ensures the fulfilment of the needs of the target people to get their acceptance.

As incremental architecture embodies permanence, the entire process and final result represents a part of the city's development and its urban fabric. Therefore, other considerations that transcend those of temporal reconstruction must be assumed. With this in mind, analyzing the evolution and transformation of the urban fabric in Syria can result in proposing other concepts that concern the permanent reconstruction of the city of Homs. In this research, it has been discussed through the revival of the neglected traditional identity of the country through the last few decades which resulted in falling to adopting the western building concepts and typologies. In this sense, Mat-building strategy presents a genuine example of achieving a balance between the past and present, the old and new which resulted in flexible forms and solution to different challenges imposed by the ever-changing requirements of the contemporary era.

In this quest, the research proposes to achieve a balance between the traditional vernacular architecture of the city of Homs and modern-day requirements. Reviving the vernacularity of the city in responding to the contemporary needs of the era creates a cohesive connection between the past, present, and the future of the city history and its urban development, coupled with building a strong relationship between the inhabitants and their built environment. Besides, it incorporates the sustainable values of vernacularity represented in efficient energy consumption and being appropriated to the local context, beside other social aspects that have been always valued by the locals. The overall concept of reconsidering vernacularity in the reconstruction process in Syria would bring together all the social, cultural, sustainable, environmental, and economic beneficial aspects framed in the context of reconstructing the urban fabric of Homs, and offer solutions to the precedent problems and ameliorate the living conditions of the inhabitants.

Analyzing the specific context and circumstances of the city of Homs brings to mind that the massive destruction of the city resulted in rubbles and debris could be incorporated in the new approach of reconstructing the city, by fixing what can be fixed and reinforcing the existing components in good conditions. This might save resources and costs and accelerate the process of reconstruction.

The proposed approach in the last part of the thesis presents a synthesized example that embodies the concepts discussed throughout the research. Therefore, it submits a conceptual project which consists of core housing units with the possibility of its expansion in the future according to their inhabitants needs and with their participation

in order to provide an environment that embraces and considers their socio-urban habits. It can be developed with further investigations and detailed considerations to be implemented in the frame of the post-war reconstruction in the city of Homs and be a part of its permanent urban fabric.

List of Figures

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