

Folded Forms- A new typology for Public Spaces in Zones of Conflict,

By

Yael Hadar

A thesis submitted in partial satisfaction of the
requirements for the concurrent degrees of
Master's of Landscape Architecture

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Karl Kullmann, Chair

Professor Louise Mozingo

Professor Peter Bosselmann

Spring 2016

Folded Forms:

A new typology for Public Spaces in Zones of Conflict

© 2016

by Yael Hadar

Table of content

Chapter 1: Introduction	2
Chapter 2: Conflict Background	7
Chapter 3: Sderot	13
Chapter 4: City Analysis	21
Chapter 5: Objectives	38
Chapter 6: Master Plan	44
Chapter 7: Site Design	50

In loving memory of Dana Galkovitch

1983-2005

Who Was Killed by a Hamas Missile on July 14th, 2005

Acknowledgments

This project would not have been possible without the guidance and support of many people to whom I am very grateful:

Karl Kullamn, Louise Mozingo and Peter Bosselmann, my supportive committee members who have provided guidance and encouragement, thoughtful critique, and fresh insightful eyes when I needed them.

Avitan family, who graciously allowed me to be a part of their experience living in the city, and for the priceless insights of what the city could be.

Andrea Gaffney, my instructor, who believed that this thesis can be realized

The wonderful **thesis students**, I learned so much from each and everyone of you. Thank you for making this semester so much fun

Thank you to **Emmanuel** who always believes in me and took such good care of me this year.

Folded Forms- A new typology for Public Spaces in Zones of Conflict

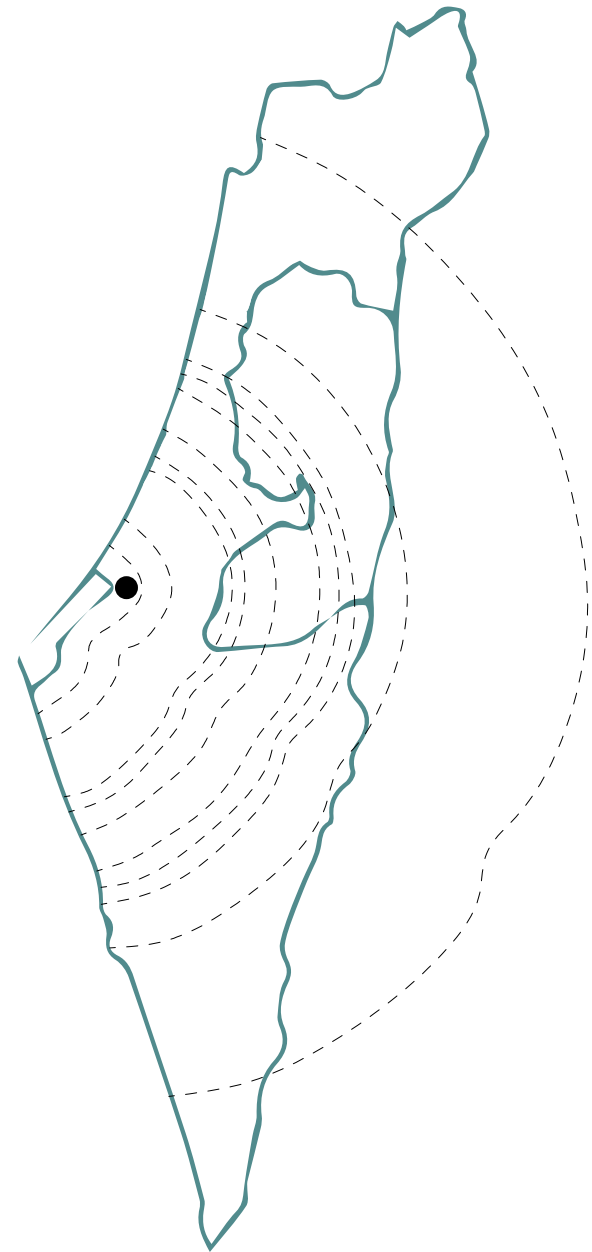


Chapter 1 - Introduction

1.1 War and Space

1.2 The conflict

1.3 Objectives



1.1 War and Space

Throughout history we see complex, pervasive and enduring relationships between war and space. Almost all societies have engaged in some form of combat against others and as a result, war is present in almost all of our landscapes. This is most permanent in the relationship between architecture and war that in turn changes the city scape and the derelict fabric of public space.

Perhaps the most ancient manifestation of the relationship between war and space is the notion of fortification. From early history to modern times, the fortification of towns and settlements was considered an integral part of planning. This measure reached its peak during the era of more or less constant war in Western Europe in the late middle ages and early modern periods (Piquard & Swenarton, 2011). Not limited to fortification, in almost every city we can find building types that are artifacts of war. This ranges from arsenals, barracks, housing for war workers, and memorials to the fallen (Piquard et al., 2011).

During the twentieth century, war — and specifically the two world wars— played a particular role in the development of architecture and space. At the end of the First World War, technological advances such as long-range guns, airplanes, and tanks, changed the notion of defense. Cities became indefensible from air attacks and so defense strategies shifted

to creating strong continuous linear fortifications defending the national territory; that, in turn, gave rise to thick concrete as the most useful measure to save lives (Hirst, 2005). This development brought one of the most monolithic and over-arching measures of defense — The Atlantic Wall. The wall included bunkers of diverse shapes and functions: gun casemates of varying sizes, observation posts, etc. (Hirst, 2005).

In present times, war has changed its form again, shifting from conflicts fought in battlefields to a more boundless and limitless conflict. In these conflicts, cities are the center of violence, increasingly involving more civilian population in direct combat (Graham, 2011). Although changed, fortifications in the sense of mass concrete structures and underground chambers did not disappear. Increasingly, defense switched from active to passive, from fortification as a means of fighting to the hardening and the protection of specific assets, such as government buildings (Graham, 2011). This change meant that fortification and military infrastructure made their way from the front line into the center of the modern city.

There is no doubt that the events of September 11, 2001 and the subsequent “war on terror” stimulated new ways of thinking on the implications war has on architecture and the built environment (Boyd & Linehan, 2013). An attack of that magnitude in the center of a dense city like Manhattan created an overwhelming sense of fear, and in that reality came the extrusion and transformation of war from the battlefields into everyday city life. At that time the invasion of militaristic strategies into the public realm was perceived as a necessary mechanism to protect both civilian population and national assets. But the diffusion of military infrastructure into

the heart of the modern city made a permanent connection between securitization and the design of contemporary public spaces. To that end, design now links together structures and places that seem to belong to very different orders (Hirst, 2005). A militarist typology has emerged in the city, concealed in many sophisticated ways aimed to control the movement of people and vehicles in the city (Graham, 2011).

In contested cities with long and enduring conflicts, militaristic intervention become known as “conflict infrastructures.” Conflict infrastructure distorts a city’s spatial qualities and overwhelms its everyday life. Its presence creates a constant reminder of the conflict for both its inhabitants and visitors to the city (Pullan & Baillie, 2013). Not long after conflict infrastructure invades the city it becomes the symbolic mark of both the city and the conflict.

Physical features of urban conflict can cause severe spatial discontinuities. In doing so, they can damage the plurality of the city and, in extreme cases, the very nature of the urban experience (Pullan et al., 2013). In this new reality it becomes of great importance to understand the relationship between war and space. How do wars change public space and public life, and what kind of qualities can be attributed to a city that is in the middle of a pervasive conflict?

Although every conflict is unique and therefore affects cities in different ways, common threads can be traced between them. According to Pullan and Baillie (2013), cities that experience enduring and intense conflicts tend to suffer from ‘spatial extremes’. These can take shape in a few forms, either an overly controlled space that doesn’t allow for the city life

to unfold; or on the other side of the spectrum, spatial chaos from a lack of planning that encourages reactionary additions or subtractions from the urban fabric. In abstract terms, the middle ground, where everyday life takes place, is absent; the problem is usually apparent as missing or deficient public space. To some extent, residents may cope and adjust, and city spaces may become reinvented in ways that are as unexpected as they are impressive. Nonetheless, long-term conflict that remains unchanneled into some constructive form damages cities in ways that may take generations to repair (Pullan et al., 2013).

Public space is a living phenomenon, taking on the characteristics of a situation (Pullan et al., 20). With this in mind, one might wonder whether cities in conflict are forever changed and public life is now defined by the conflict. Or can public space in a city of conflict be re-imagined? Can ongoing armed conflict and public life co-exist in a city? If so, what are the tools landscape architecture can use to encourage that?

The first part of this thesis will examine this phenomenon while looking at Sderot, an Israeli city located in the conflicted border separating Israel and Gaza. In this part I will examine how planning in a state of existing conflict changed the fragile fabric of public life in the city.

From there, I will explore the role landscape architecture can play in mitigating the effect a conflict has on public space by proposing several design interventions in multiple scales, suggesting that careful examination and deliberate design moves can change public space in a way that will allow for safety and public life to co-exist.

1.2 The Conflict

The city of Sderot is a small industrial city, of 22,000 citizens. The city lies 2.5 kilometers from the Gaza Strip, and since 2001 has been under relentless missile attacks (Figure 1). With only 15 seconds of warning before a rocket hits, Residents of the city spend significant periods of time in shelters or attempt to remain close to shelters. (Esveld, 2009).

As a result, a culture of concrete landscape has emerged in the city. Reinforced concrete is used in many different forms to provide safety: the city hastily added a safety cube to every household; all schools were remodeled to address the new situations; and most noticeably, hundreds of concrete cubs termed "Migoniot" were spread throughout the public realm. This, along with significant population decline, has left Sderot with no functioning public spaces.



Examples for the concrete culture in the city- on the left an apartment building with added safety rooms, in the center a reinforced school building, on the right a concrete bus stop.

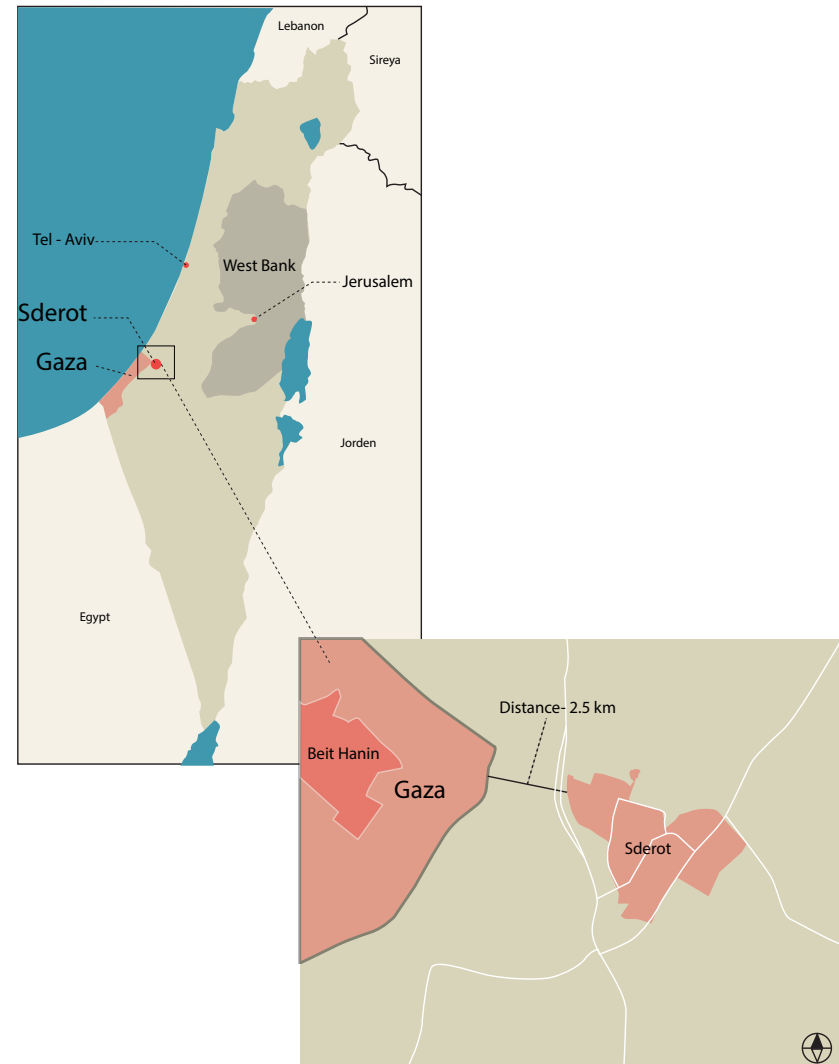


Figure 1 - A map of Israel, zooming in on the relationship between Gaza and Sderot

1.3 Objectives

This thesis seeks to understand what role design can play in the complex relationship between war and space. Can careful and thoughtful design help mitigate the effects war has on public spaces and public life in cities?

To address this particular situation, I will begin by exploring the history of this specific conflict as well as the history of the city of Sderot. Furthermore, I will conduct an analysis of the urban layers of the city as well as interview civilian population to try understanding the reality of life in a conflicted city.

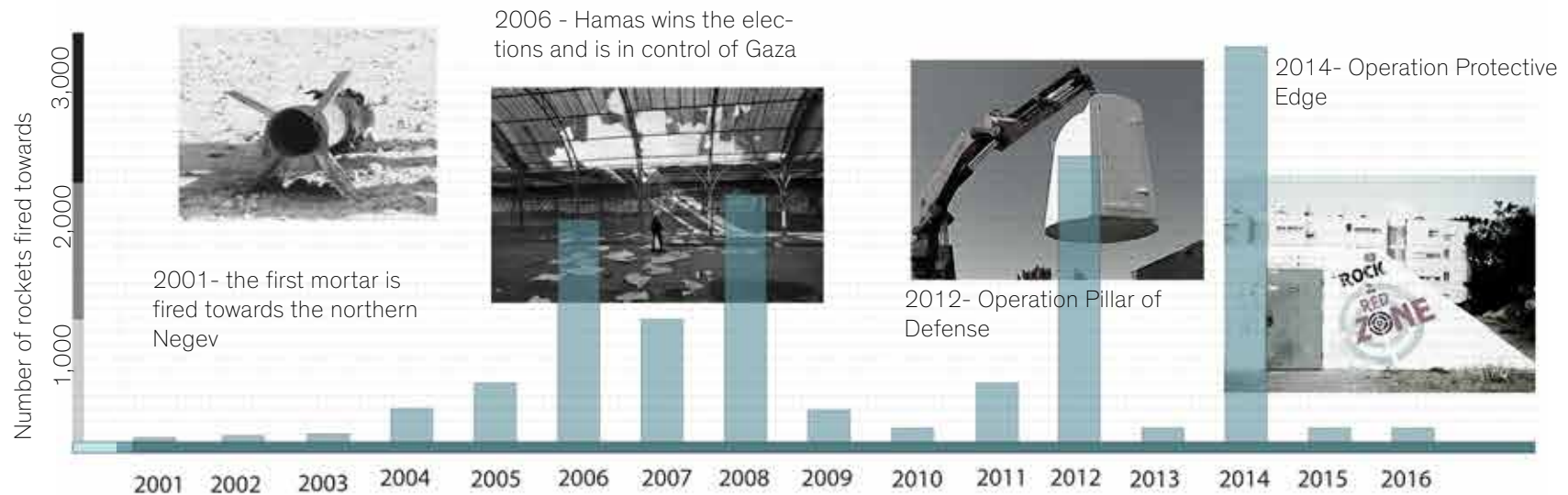
I hope that after doing the preliminary analysis I could come up with a series of interventions that would work in multiple scales. Drawing from information about urban and city planning as well as studying precedents of security architecture, I will start from a city-wide schematic design and continue all the way to a detailed drawing of one such intervention.

Chapter 2 – Conflict Background

2.1 Key Events in the Conflict

2.2 Missile types

2.3 City Surrounding



Israeli forces occupied the Gaza Strip, a short area of land adjacent to the southwestern end of Israel, during the Six Day War in June 1967. (Figure 2) Since then, until the summer of 2005, Israel had enforced a military regime in Gaza. That led to a few very violent rounds of conflict, the last one started in 2000 and in many ways it is still going on, even though an official truce was declared in 2005.

This current conflict has multiple fronts but I will focus on that of the Gaza strip. The main fighting strategy the armed militants in Gaza use is firing missile and mortars towards large population centers in Israel. In response, the Israeli Defense Force is attacking targets from air.

During the 15 years of the conflict, Palestinian armed groups have fired more than 18,200 rockets and mortars towards Israel. With passing time, the missiles have increased in range, reaching almost all of Israel (Amnesty, 2014).

In all, 33 Israeli civilians, including six children, were killed by rockets and mortars Launched from Gaza. Nine of them were residents of the city of Sderot. Many other civilians have been injured, some of them very seriously, and civilian property in Israel – including homes, businesses, schools, public buildings and vehicles – has been damaged or destroyed. Over the years, rockets and mortars launched by Palestinian armed groups have also killed Palestinian civilians in the Gaza Strip (Amnesty, 2014).



Figure 2 - The Gaza strip

2.1 Key Events in the Conflict

The second Intifada (or the al-Aqsa Intifada, after the Jerusalem mosque), marks the beginning of the current conflict. The Intifada resulted from a combination of the failure of the Oslo peace process in creating conditions for an independent Palestinian state, and failure of the preceding Camp David summit.

This Intifada—the Arab word for uprising—started on September 28, 2000, and continued until a truce was declared on February 8th, 2005. On March 18th, 2001, the first mortar was fired from Gaza towards the northern Negev and rockets and mortars have not stopped till this day.

Preceding the truce, in the summer of 2005, the Israeli government unilaterally implemented a plan to disengage from Gaza in hope that this action will stop the violence. All Israeli settlers and military personnel were withdrawn from Gaza, leaving control of Gaza up to the will of the Palestinians (Figure 3).

After Israel's withdraw from the Gaza Strip, the Palestinian Authority held elections in 2006 for the control over the Gaza Strip. Hamas, an internationally declared terrorist organization, won the election and gained administrative control over the Strip. Soon thereafter, in June 2007, Hamas mounted a military coup and took full control of Gaza (Schweitzer, 2013).

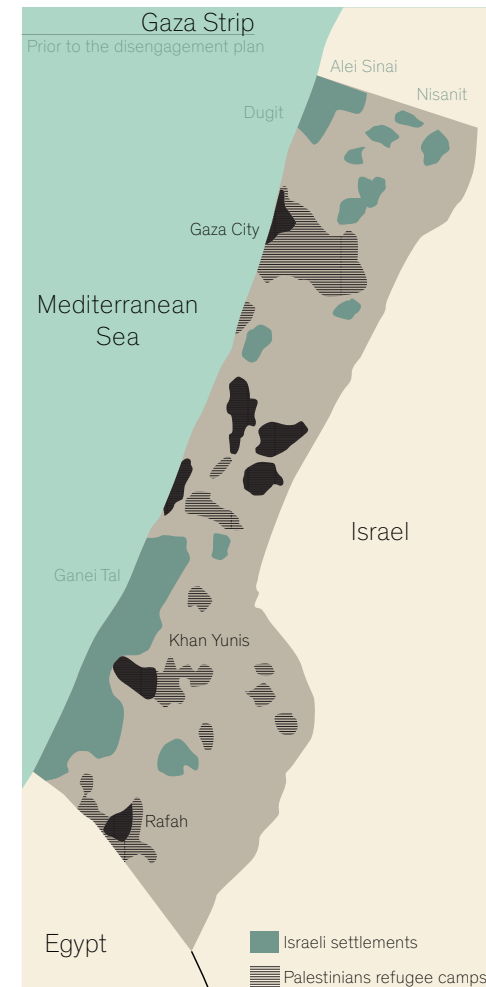


Figure 3
The Gaza Strip before the disengagement in 2005, showing Israeli settlements within the Gaza strip

This led to a dramatic increase in the number of mortars launched towards Israel, reaching a peak of 2,000 rockets fired during 2007. The Escalation manifested itself with a large migration from Sderot to the center of Israel, and marks the beginning of the massive change in the city.

Between the years 2001 to 2008, 12,000 rockets and mortar shells were fired towards Israel, more than 2,000 of them were fired during 2008. This persistent reality forced the Israeli Defense Force (IDF) to undertake a three-week military operation in Gaza from December 2008 to January 2009, known as "Operation Cast Lead".

During the three-week military operation, the city of Sderot was struck by eighty-four rockets exploding within the municipal boundaries of the city and was the subject of 140 warning sirens, averaging seven alerts and four explosions each day (Amnesty, 2014). Given that the average rocket warhead is 20 kg, a total of 840kg of explosives detonated in Sderot during that period. This led to three Israeli civilian casualties (UN, 2012).

After a ceasefire was reached in January 2009, the number of rockets decreased but did not stop. On November 14, 2012, the Israeli Air Force fired at a vehicle in the Gaza Strip. The strike killed the driver, Ahmad al-Ja'bari, the head of the military branch of Hamas in Gaza, and a passenger, Muhammad al-Hams. This attack, which followed weeks of escalation in violent incidents at the border between Gaza and Israel, launched the Israeli operation "Pillar of Defense". The operation lasted eight days, ending on November 21, 2012, when Israel and Hamas agreed to a ceasefire.

Official Israeli sources reported that Palestinian armed groups fired over 1,500 rockets towards Israel in those 8 days. A number of these rockets reached, for the first time, Tel-Aviv and Jerusalem, targeting Israel's parliament (B'Tselem, 2013).

According to Israeli sources, 4 civilians were killed, and a further 239 civilians were injured. Numerous rockets also hit Israeli residential buildings. An estimated 80 Israeli houses were either destroyed or sustained damages as a result of Palestinian rocket attacks during the crisis (B'Tselem, 2013).

Following the ceasefire, declared on November 21, 2012, no rockets or mortars were fired from the Gaza Strip for over three months, the longest time fire halted so far (Amnesty, 2014).

Beginning February 26th, 2013, sporadic rocket and mortar fire started, escalating between the 11th and 13th of March, when Islamic Jihad's al-Quds Brigades fired dozens of rockets and mortars into southern Israel after an Israeli air strike killed three of its members. There was a significant increase in rockets and mortars fired from mid-June 2014, with at least 250 rockets and dozens of mortars hitting the western Negev, particularly the city of Sderot.

On July 7, 2014, Israel announced "Operation Protective Edge", with the stated goal of stopping rocket attacks from Gaza on Israeli civilians, and destroying the underground tunnel system the Gazan armed groups built with shafts near Israeli residential areas in the border.

According to UN data, Palestinian armed groups fired 4,881 rockets and 1,753 mortars towards Israel between 8 July and 26 August 2014. These attacks killed six civilians in Israel, including one child, wounded others, and damaged civilian property (Amnesty, 2014; 6). Up until now, the summer of 2014 marks the pick of the conflict with the largest amount of casualties and damage for both sides.

Since truce was declared in August of 2014, there is still sporadic mortars and missiles firing from Gaza towards the Northern Negev. In the past two weeks, beginning May 2016, there seems to be more hostile activity in the boarder and many citizens in the region are sensing the tension of a possible uprising.

2.2 Missile types

The range of the rockets fired by Palestinian armed groups from Gaza has increased over time. Between 2001 and 2004, home-made Qassam rockets with a range of up to 10 km and locally manufactured mortars were fired. In more recent years, armed groups in Gaza have produced, upgraded or smuggled thousands of “Grad” rockets of different types, with ranges varying from 20 km to 48 km, and acquired or produced smaller numbers of medium and long-range rockets. The latter include rockets with a range of 80 km (Amnesty, 2014).

The longer-range rockets have dramatically increased the number of civilians in Israel and the occupied West Bank who are within range of projectiles fired from Gaza. The majority of Israel's 8.3 million people, and all 2.8 million Palestinians in the occupied West Bank, are now within the range of at least some of the rockets held by Palestinian armed groups in the Gaza Strip. (Figure 4)

All the rockets used by Palestinian armed groups are unguided projectiles which cannot be accurately directed at specific targets. The inaccuracy of these rockets increases with the range.

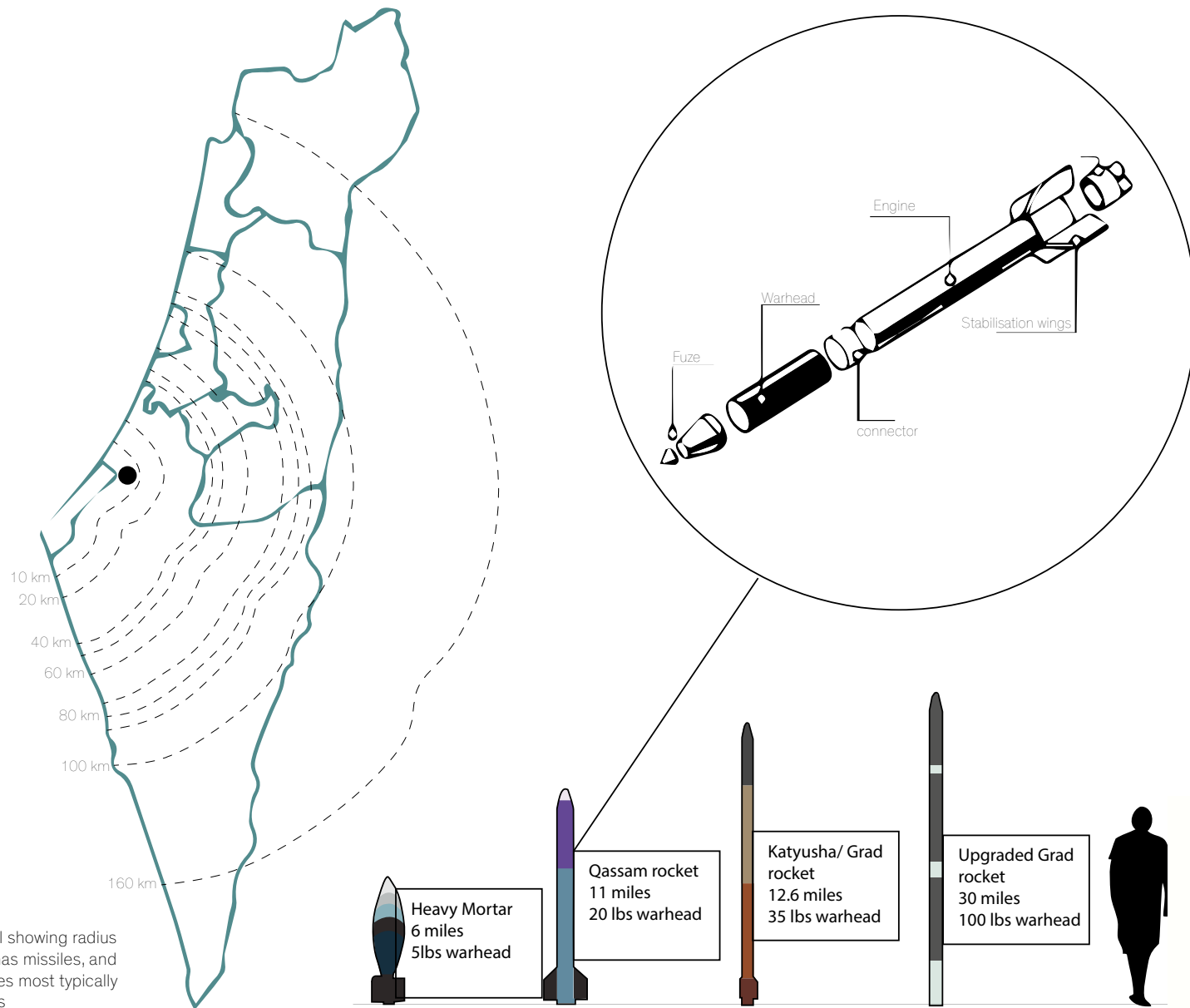


Figure 4
 A map of Israel showing radius ranges of Hamas missiles, and types of Missiles most typically used by Hamas

Chapter 3 – Sderot

3.1 Introduction - "Development towns"

3.2 Sderot History



3.1 Introduction

In order to understand the affect this conflict has on the city of Sderot, it is crucial to understand the history, and the socio-economic conditions in the city prior to the beginning of the conflict. The city was built during the 1950s as a prototype for medium sized peripheral urban town centered in the middle of small agricultural communities. This prototype was called "Development towns".

The planning prototype of the "development towns" as well as the story of settling the towns plays a significant role in the current situation in the city.

3.1.1 "Development Towns"

Sderot is one of 28 "Development Towns" which were built during the 50s, targeted to settle two main areas of Israel in the hope that they will act as the country's principal frontiers: the Negev in the south, and the Galilee in the north (Figure 5) (Yiftachel, 2000).

The need to populate the new development towns brought with it the opportunity to settle the new waves of immigrations that arrived to the new country after its establishment

in 1948. The waves of immigration, especially from Northern Africa, created a severe housing shortage, and large immigrant's camps ("ma'abarot") were established, usually near the main urban centers. By 1951, some 250,000 immigrants resided in these camps, most of them poor with no contacts in the country.

Government officials saw an opportunity to provide housing to the new immigrants in the development towns, and so a plan was revised. The plan entitled "from the boat to the 'development town,'" housed more than 273,000 immigrants in the new development towns. Because the new cities had not yet, for the most part, been built, those new immigrants were placed in tent camps for many years. This plan created a clear segregation between the new immigrants and the older population in Israel, and is still a traumatic recollection for many people (Troen, 1988).

Interestingly, the planners assumed that the new immigrants would be predisposed to the small town life rather than to that of a collective social and economic arrangements, as was the practice in the neighboring agricultural towns (Kibbutzim); therefore, they placed the vast majority in the development towns (Troen, 1988). This ethnic concentration, and the low socioeconomic background of most of the new-town residents affected a rapid transformation of the towns into con-

spicuous pockets of deprivation (Yiftachel,2000).

Attempts to develop an economic base to the towns often resulted in the establishment of (usually public) labor-intensive industries (typically food and textiles). Those were attracted to the towns by the pool of available cheap labor, the inexpensive rent and rates, and the handsome incentives offered by the Israeli government. In the long term, however, this economic structure pulled the towns further down the socioeconomic scale, particularly in times of economic recession and restructuring.

The last event to greatly influence the development towns was the arrival of a large numbers of ex-Soviet Union Jews during the early 1990s. The government constructed large housing projects that had attracted some 201,000 new immigrants to the towns by 1995. The immigrants who settled in the towns were the least educated and had the lowest financial resources among the new wave of migrants only maintaining the low socioeconomic status in those towns (Yiftachel; 2000).

3.1.1.1 City Planning Strategies

Israel's government along with the nation's leading professional planners used acceptable models of that time and fused them to create a widely accepted planning strategy for the entire country. The plan was called the "Sharon Plan", after Arie Sharon—the head planning authority in the prime minister's office between 1948 and 1952. The plan created a pyramid of five primary types of settlements in a hierarchical relationship: the village unit, rural center, rural-urban center, medium towns, and large towns (Yiftachel, 2000).

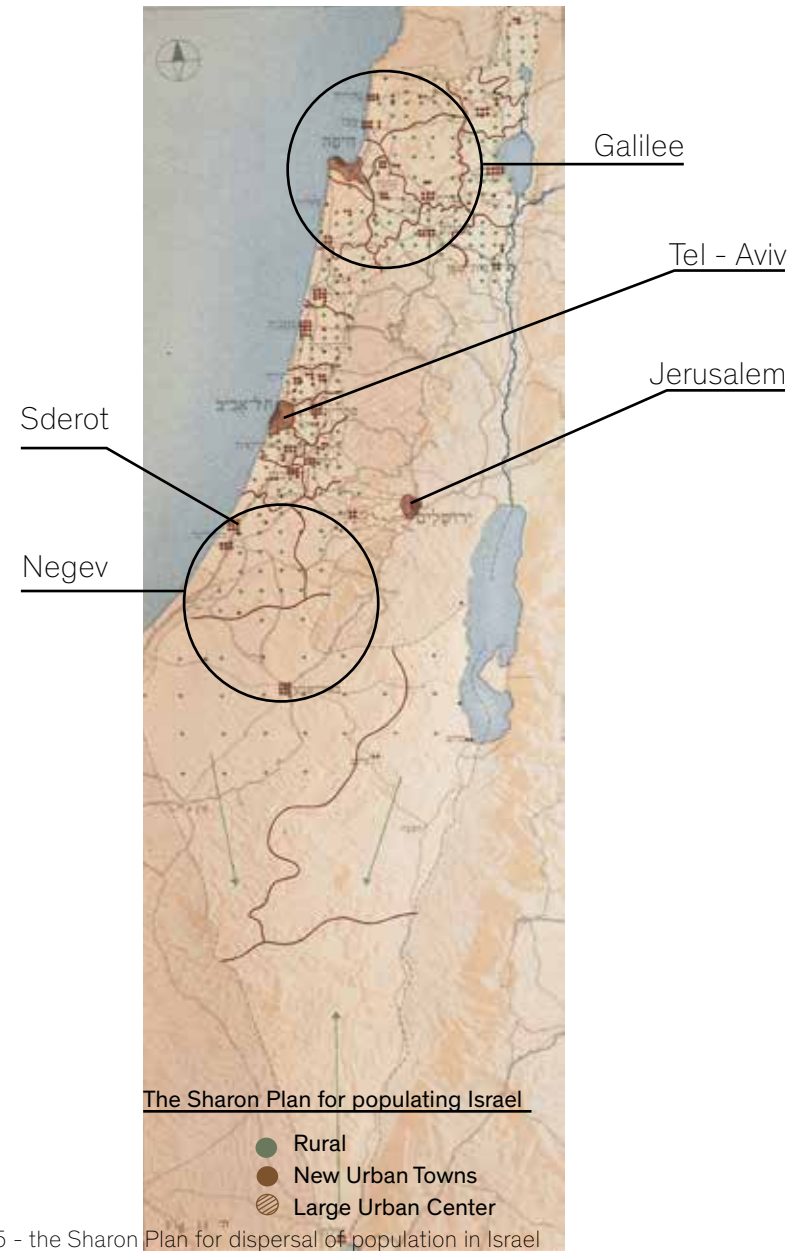


Figure 5 - the Sharon Plan for dispersal of population in Israel

The Sharon Plan, which was actually titled "Physical Planning in Israel", is one of the most well known in Israel planning history. The plan explained the need for planning for population distribution policy in terms of economic, social and defense considerations. It was based on five aspects of planning: agriculture, industry, transportation, parks and forest, and the development of new towns (Evans, 2007).

The objectives of the plan included: designation of agricultural land and location of settlements, determining a rational distribution of urban centers, outlining a transportation network, and preservation of land for national parks. Development was to be implemented in a manner that would insure population distribution across the countries different regions. The plan lists methods of implementing population dispersal policy, including using the massive influx of immigrants for settlement in peripheral areas in order to insure national objectives (Sharon, 1952).

According to the plan, 45% of the population were to live in the three largest metropolitan centers: Tel Aviv, Haifa, and Jerusalem; the remaining 55% were to be spread among the medium (40,000-60,000) and small towns (6,000-12,000) set throughout the Galilee and the Negev. As the plan was projected for a total national population of 2,650,000, the planners ambitiously hoped to settle 1,120,000 in the new development towns. It was particularly in envisaging this type of settlement, between the agricultural colonies and the established large cities that the plan was most revolutionary about (Troen, 1988).

The leading planners at the time were educated in Europe and learned the classical European planning methods, trying to implement them in the new country. After reviewing possible planning models for the new development towns, Sharon and his colleagues determined that small central and western European countries offered the best model as believed those were economically, physically and sociologically similar to Israel. In keeping with the thinking of many European planners, Sharon's Master Plan divided the country into 'regions' which became the basic units for planning (Troen, 1988).

The aspiration was to create a harmonious regional development, mixing large urban centers and small agricultural communities, which was largely inspired by the theory of the German geographer Walter Christaller, who published the book "central places." Although Christaller was never explicitly mentioned in the plan, the general concept in his theory is of a network of small urban centers intended to be used as a link to rural back country areas. This strategy clearly resembles that of the development towns and their relationship to the "Kibbutzim" and the "Moshavim" (Troen, 1988).

Furthermore, the juxtaposition of blocks of cement- apartment buildings four to six stories high with an egalitarian aesthetic surrounded with vegetation resembles the English model of English "new town", which itself was once inspired by the garden city movement (Troen, 1988). An example of that can be seen in the typology generated by Sharon for the development towns (Figure 6).

The development towns were usually built as new, or based on significant additions to existing towns, such as Ramla or Acre (Yiftachel, 2000). The amount of new development and the need to attract new migration to those areas required large public resources. And so, incentives were awarded for (Jewish) settlers and investors in the periphery. Those incentives included tax breaks, subsidized land and housing, lower interest rates, development of regional infrastructure, direct establishment grants, and rent assistance (Yiftachel, 2000).

The new Development Towns were supposed to thrive as urban centers in Israel's rural and peripheral regions, particularly in areas where a Jewish 'presence' had been sparse. Although the overarching idea behind the development town might have been feasible, in reality the agricultural communities provided for themselves with almost everything they needed, and rarely did they use the new development towns as a resource. That, in turn, created a great segregation both physically and mentally between the agricultural communities and the development towns.



Figure 6- "Sharon Plan"- prototypical development town.
Above- an original drawing from the plan depicting the elements a development city should have.
Below- An aerial image of the building of such development town

3.2 Sderot's History

In 1951 an immigrant camp ("Ma'abara") named Gevim-Dorot was established where the city is today. The camp had 80 families, all of them new immigrants mostly from Kurdistan and Persia. They were living in tents until permanent houses were completed in 1954.

In the mid-1950s, a wave of immigrants from Morocco settled in the township, and in 1956 it was given the name Sderot and was recognized as a local council. In the 1961 census, the percentage of North African immigrants, mostly from Morocco, was 87%; another 11% of the residents were immigrants from Kurdistan.

During the 50s and the 60s, the population was sparse, and most of the houses were one level with adjacent land for cultivation. Later, in the 70s, multi-story houses were built to accommodate another wave of immigrants from Morocco.

The town's growth rate was very low up until another wave of immigration flooded Israel in the 1990s. Continuing with the same approach from the 50s, the government was quick to settle the new immigrants in the peripheral development towns. This time the immigrants were from the Ex-Soviet union and later on from Ethiopia. A large new neighborhood had to be built relatively quickly to accommodate for all the new people. With the new population increase Sderot

changed its status to a city.

Today there are 22,000 residents in Sderot. According to the last census in 2010, the city is in negative growth of -0.1%.

3.3 City Surrounding

Sderot is located in the heart of 13 small agriculture communities of different sizes with an average of about 400 members in each community. Almost all of them were established before Sderot. (Figure 7)

Sderot's location was selected because of its closeness to the many smaller communities. The planners aspired that the economy of the city would be based on providing resources to the surrounding agriculture communities

However, this aspiration did not fulfill itself, for two main reasons. First, because of the low density in the city it did not provide a vibrant urban experience. So, the surrounded population used the larger urban centers that are not so far from the area. Second, the agricultural communities provided for themselves with almost all the amenities they need. They have their own school system, health amenities, food resources, and didn't need what the city had to offer to them.

Pretty soon after its establishment it was clear that the city cannot base its entire economic growth on the surrounding communities. That, along with the need to create new industries, made the government focus a great deal of resources to promote building new industries in the outskirts of the city. As a result, a new industrial zone was established in the city, providing labor intensive work opportunities for the city's

residents.

Near Sderot, the agricultural communities have their own separate local council, "Sha'ahar ha-Negev". It includes 10 Kibbutzim, 1 "moshav", an agricultural farm, a village for young immigrants, and two industrial areas. Approximately 7,000 people live in Shaa'r ha-Negev, which is viewed as a green lounge in the middle of the northern Negev. The council's territory spans over 180,000 dunams—the largest open space closest to the center of Israel.

Although the two councils (Sderot and Sha'ar ha-Negev) tried to cooperate on many issues in the past — including an idea to reunite all the industrial zones into one industrial zone, as well as creating a unified educational system for both councils. None of those ideas was exercised. Even though the segregation between the councils is evident in many ways, level of education is the most apparent (Z. Avitan, Personal communication, January, 2016).

In the next chapter I will analyze the separate layers of Sderot, which will allow me to understand the current conditions in the city and will open a hatch to understand both the historical effects and the conflict's effects on the city.



Figure 7- 10 km radius around Sderot showing the city surrounded with agricultural land and small agricultural communities

Chapter 4 – City Analysis

4.1 Land Use

4.2 Parks

4.3 Circulation

4.4 Social Context

4.5 Effects of the Conflict



4.1 Land Use

The original planning typology created in the 1950s is still apparent in the city today. The original plan for the city focused on the need for a central commercial zone to be used by both the city's residents and the rural communities. This large center would be surrounded by small neighborhoods, each one with its own small center and vegetated area.

Today, the original commercial area is still active. However, due to a lack of planning, the city allowed for a new commercial center to be built adjacent to the old one, with a complete disregard to its uses and circulation patterns.

There are seven neighborhoods surrounding the center, each neighborhood has a school in close proximity as well as its own small shop that can provide for basic needs. The shop is usually a small family-owned place where some of the neighborhood's older people get together to watch soccer on a small screen and smoke.

The city has an active industrial zone in the outskirts of the residential zone. This industrial zone compiles many labor intensive factories such as food and textile, next to multiple auto shops, and vacant lots.

The analysis of the land use patterns in the city revealed one striking problem - the overlapping uses in the city. This overlap

creates a maladaptive patterns of circulation and abandonment in the city.

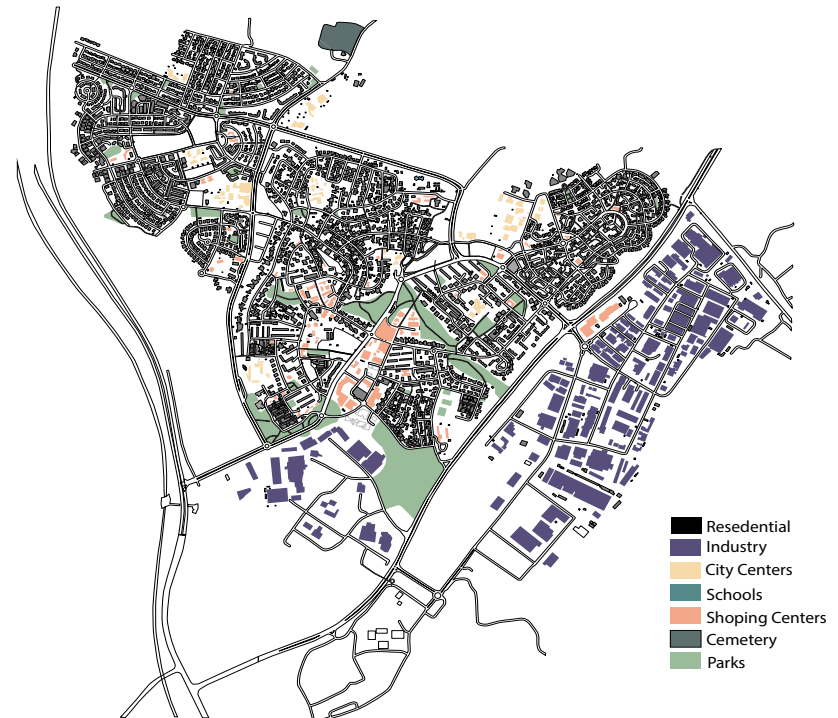


Figure 8- Land use map

4.1.1 Overlapping Uses

The original planning strategy for the development towns suggested one central commercial zone. Although on paper the city still has one commercial zone, there is evidence showing a pattern of neglecting the old and building a new next to it. The central commercial zone is an extreme example of that trend, where the old commercial center still stands in a disintegrated state, and right next to it a completely new center was built. The new center was built with accordance to the increase in population but was designed in a way that does not integrate the old circulation patterns and uses.

This created a strip of four commercial areas that are completely separated from one another by large walls or roads with no crossing. Consequently, most people drive from one center to the other, which creates the need for parking spaces near every small center (Figure 9)

In addition to the overlapping services, the new center also pulls people away from the city due to its location right at the entrance to the city. People from the neighboring communities can now get all their shopping without actually entering the city, diverting wanted influence from inside out.

An extended overview of the overlapping uses in the center of the city would be explored later in this work, when will move to analyze the existing condition for my design intervention.



Figure 9- Overlapping commercial centers



4.1.2 Vacant Land

Another noticeable element regarding the land use pattern in the Sderot is the amount of vacant land in the middle of the city. This feature is particularly noticeable in close proximity to the main circulation routes (Figure 10). This creates a sensation of abandonment when driving in the city. And it is even more noticeable when walking on the main roads. This hinders the feeling of personal safety when walking in the city and it takes it one step further away from having an active public life.

Some of the vacant lots are areas of new construction (mostly of apartment buildings up to 6 stories) but there is a large amount of vacant land with public buildings that have been abandonment mostly because they were deemed as un- safe



Figure 10- vacant land in the city



4.2 Public Parks

The city has 3 medium size parks and numerous small neighborhood parks (figure 11).

According to a former local official, the city gets donations from Jewish communities around the world in order to build new parks. This large investment in parks is due to the understanding that green open spaces in close proximity to residential area is important to improve the wellbeing and reduce stress. (Z. Avitan, Personal communication, January, 2016)

Although the idea of distributing green spaces in the city aligns with contemporary city planning strategies, the magnitude in number of those small parks makes it impossible to maintain. The result of the ongoing neglect is that parks are not used, with the exception of two parks—a park by the public library and another in close proximity to a school.

A number of problems are arising when looking at the distribution and programming of the parks. The next points may help explain why even recently built parks are not experiencing any activity.

- The city lacks an **organizational strategy** and as a result the distribution of parks is sporadic. There seems to be no consideration to adjacent activities and population density. Many of the parks are located in proximity to vacant land and are not highly visible.

- Lack in **diverse activities and programming** in the parks. Most parks are a combination of a big lawn with a small generic prefabricated play structure or workout equipment that is located inside. It seems like the needs of the adjacent communities as well as environmental factors are not taken into consideration.

- The **maintenance** crew in the city can't cover the amount of small parks. Although the design is very basic and doesn't seem to require much maintenance most lawns are brown and the play equipment is broken. The neglect is most predominately notable by the sheer the amount of garbage in the parks. As a result of the neglect most of the neighborhood parks have become a gathering location for drug dealing and drug use.

The bigger parks are located in close proximity to one another on the main road. Even though all three were built or renovated in the last 10 years they are in a severe state of neglect. They are constituted of the same basic parts as the smaller parks, but usually have a bigger lawn area. A short observation unfolded that the parks are mostly used as a way of passage (short cut) not as gathering spots. Their design reinforces this behavior, by providing mainly meandering paths through a big lawn area.

4.3 Circulation



Figure 11- park distribution in the city

The circulation pattern in the city greatly resembles that of a prototypical suburban in different parts of the world. There is a network of winding roads, connected to one main circular road going through the city neighborhoods. Many roads end in cul-de-sacs, and have narrow small pedestrian paths adjacent to them.

The pedestrian circulation is secondary to vehicular circulation. Most pedestrian roads are narrow sidewalks by the main vehicular roads, or narrow passage ways between buildings. In neighborhoods foot traffic is sparse due to the condition of the pavements and the unclear path of travel.

Michael Southworth, (2005), describes criteria by which to measure 'walkability': 'Connectivity', both locally and in a larger urban setting, 'linkage with other modes of travel', 'fine grained and varied land use patterns', 'safety' from traffic and crime and the 'quality' of the path and path context which refers to visual interest, definition and exportability of the environment. The multiple loops and cul-de sacs as well as the vacant land that mostly surround pedestrian circulation damages the filling of safety in the streets and creates a lack of interest. Maintenance issues have a large part in the current lack of pedestrian circulation. There is an extreme lack of visual interest when walking by the street greatly because of vacant



lots all around the main circulation routs. Additionally, the pavements themselves are broken and there is lack of shade. During the summer times the temperature can get up to 40 degrees Celsius (110 Fahrenheit), the heat makes walking in unshaded areas almost unbearable.

There is an unease sensation when exploring the city by foot, as I did for two weeks. Except a few rare occasions I was the only person walking surrounded by wither fast moving cars or complete emptiness. Many times I had to cross the streets from one side to the other because the sidewalk either ended or blocked by garbage and trimmed tree foliage.

There is no bicycle circulation network in the city, as is the case in most of Israel. Many teenagers ride electric bikes that can get up to 60 KMH and they ride those on the sidewalks causing many accidents with pedestrians.

Public transportation in the city is e-regular and most people use their private car to navigate within the city. In 2014 Sderot was connected to the rail system and sense then many people use the train for the commute to work. Although a positive addition to the city, it didn't achieve the main goal- bringing more people into the city.



Figure 12- Vehicular circulation in the city
Main rods, secondary roads and pedestrian circulation in a circular pattern



4.4 Social Context

4.4.1 Density

Sderot is a low density city with 22,000 people on 6.4 Square kilometers of land. Some neighborhoods are more dense than others (Figure 13). The low density nature of the city and the negative growth seem to be in contrast with the city's expansion program. The current program, including a new neighborhood planned to be finished by 2018, are geared towards expansion outwards instead of creating more density in the current neighborhoods, and occupying vacant land.

4.4.2 Demographics

23% of the city population are first generation immigrants, of them, 30% are from the Ex-Soviet union. The average salary is 5,537 NIS (equivalent to 1,300 USD), this is lower by 20% from the average salary in Israel. Only 8% of the city population have an undergraduate degree, the rest have either a high school diploma or a professional diploma there are 39% unemployment in the city, and out of the 61% that work, most are industrial workers, with low salary. (Census, 2008)

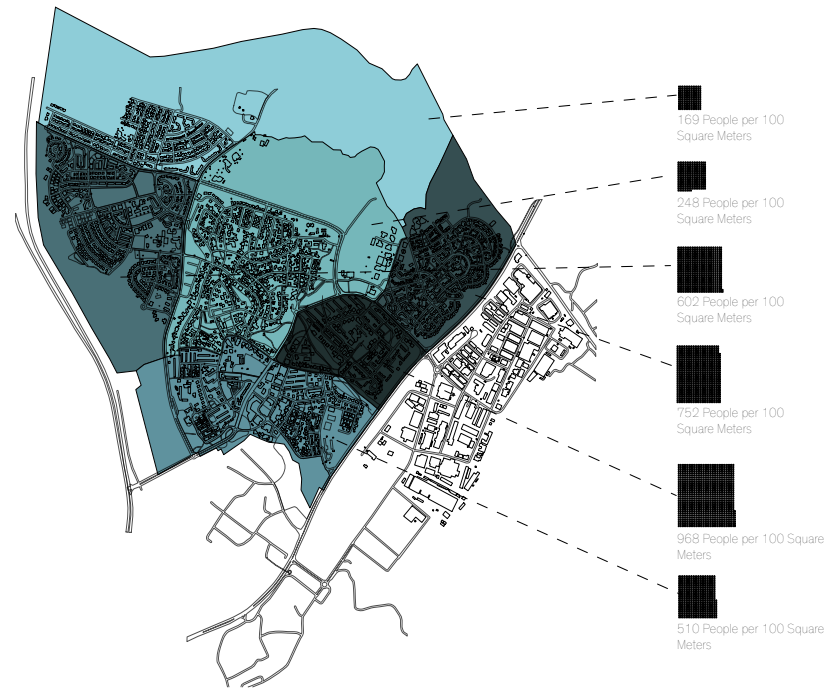


Figure 13- city density with a breakdown to the seven neighborhoods and their density

4.5 Effects of the Conflict

On November 26, 2006, Hamas issued a press statement saying, "We will not stop firing on the Zionist settlement until the last citizen of Sderot leaves". Furthermore, in an interview the former Hamas foreign minister, Mahmoud A-Zahar said, stated that they hope that "Rockets against Sderot will cause mass migration, greatly disrupt daily lives and government administration....We are using the methods to convince the Israelis that their occupation is costing them too much." (Schweitzer, 2013)

The disturbance in simple day to day life activities in the city becomes clear when talking to citizens of the city. Dor Avitan, a resident of Sderot, describes life under the Qassams threat: "the stress and tension take control of your entire life," he says. "When I take a shower, with the shampoo on my head, I need to wash quickly, or soap myself swiftly, so, Heaven forbid, the siren [rockets alert] won't catch me in the middle; or in the restroom" (D. Avitan, Personal Communication, January, 2016).

According to a study conducted in Sderot before 2008, ninety per cent of residents had seen or heard a rocket fly overhead, 92% had experienced a rocket falling nearby, 56% had experienced shrapnel hitting their home, and 65% knew someone who had been injured. This study was done eight years ago, so one can only imagine what the rats are now (Schweitzer, 2013).

Before exploring the effects the conflict has on the city scape I will explore the effects the conflict has on the population, suggesting that psychological and economical effect of the conflict need to be addressed when designing in conflict zones.

4.5.1 Psychological Effects

Dr. Ronny Berger conducted a study in Sderot which revealed that "[c]hildren aged 7 to 12 suffer most, with 74% percent experiencing extreme fear, 67% percent refusing to talk or visit places that remind them of an attack, and 57% enduring nightmares and other sleep difficulties" (Feldman & Vengrober, 2011; 17).

The last report posted in the national television in Israel says that no less than 63% of children in the southern Israeli town of Sderot suffer from post-traumatic stress, mostly due to the intense rounds of violence that have occurred between Israel and the Gaza Strip (Sderot Media, 2015).

Dr. Adriana Katz, director of the Sderot Mental Health Center, refers to the children of Sderot as the "Qassam children." Childhood for some of these children has been lived largely within the walls of their own homes, due to the quick access to a bomb shelter a fact that severely damages their development. Devora Biton, a mother living in Sderot, commented, "Out on the street you are tense all the time and can't let your kids go far The house is like a prison. We try to make it nice, but it still feels like a prison" (Schweitzer, 2013; 164).

The generation of children living with constant threat of rockets has shown some major problems. Clinical psychologists noticed that the children's speaking skills are not developing at a rate appropriate to their age. While a normal child learns to speak at around the age of one, many children in Sderot do not begin to speak until the age of three or four.' Dalia Yosef, director of the Sderot "Hosen Center", attributed the developmental problems to the state of stress and panic that the Sderot children are subjected to (Nuttman-Shwartz & Dekel, 2009).

In this unique situation another very permanent topic comes up—the importance of community to mitigate stress. This manifests itself in the contrast between Sderot and the collective agriculture communities surrounding it. Those communities have strong shared ideological values, as such, these inherently cohesive communities have access to a network of internal and external resources and supports. Researchers suggest that because of Sderot's marginalized social status and history of resource deficits, the residence of the city endure higher levels of psychopathology (e.g., PTSD and depression symptoms) (Stein et al., 2013). This support may account for the surprisingly low rate of PTSD in the agricultural communities compared to the rate in Sderot, despite their equivalent rates of exposure (Stein et al., 2013).

Recent research on the effects of traumatic events has found that environment and community as well as the individual's sense of belonging, may protect from the negative consequences of adversity and may positively affect coping. A sense of belonging is characterized by mutual concern, connection, loyalty, and trust that personal needs will be met

through commitment to the group as a whole. (Stein et al., 2013)

This highlights the need for public spaces that will help create and maintain community engagement and a stronger support system. Although there is a basic understanding in the city that parks may help cater for those needs, the lack of planning actually hinders the same goal itself.

4.5.2 Economic Effects

Real estate and small businesses had suffered most from the conflict. According to Yakov Levy, an Sderot Realtor, prices of homes fell by 50%. Housing prices were nearly double in 2000 before the rockets began. Furthermore, between 20 to 30 percent of businesses in Sderot and surrounding areas have shut down since 2001. Sales at stores in general have dropped by nearly 50 percent. During the intense escalation of May 2007, 350 small businesses were forced to close down. In January 2008, Hollandia, a major international mattress factory, Employing close to 100 local residents in and around Sderot, relocated to central Israel (Trachtman & Bedein, 2014).

During operation "Cast Lead" in 2008, all local schools were closed as well as non-essential businesses and factories. Parents had to stay at home with their children, and in families with two working parents (most instances), at least one income earner was off work in order to care for the children during the war (UN, 2012).

In the weeks leading up to Operation, the Israeli Government created a special budget of 327 million NIS [New Israeli Shekels] (83 million dollars) to fortify shelters for all residents, businesses, and public buildings within 4.5 kilometers of the Gaza border including Sderot (Schweitzer, 2013). By the end of that round of hostility, the Israel Tax Authority paid the equivalent of 20 million dollars as compensation for “direct damages,” including damage to buildings and vehicles.

In addition for the need for fortification and compensation for damage the government created a compensation program and aid for local businesses and municipalities that suffered during the operation. This aid has provided vital support; yet it has been unable to cover the enormous financial cracks created by the constant attacks from Gaza.

The next major economic impact on the city was during operation “protective edge” in the summer of 2014. On 29 July 2014 the Israeli economy website, ‘Calcalist’, estimated the damages and expenses occurred during the operation have reached 7 billion shekels (2 billion dollars) (Trachtman et al., 2014).

Although, the apparent overwhelming effect the conflict has on the city, the state of Israel has ruled that Sderot is not a war-zone area and therefore businesses and buildings damaged by rockets do not receive immediate payments for damages, but retroactive payments only (Trachtman et al., 2014). That is very hard for families that their property sustained damage and have no cash flow to start fixing their houses, or look for an alternative arrangement.

4.5.3 "Tzeva Adom"

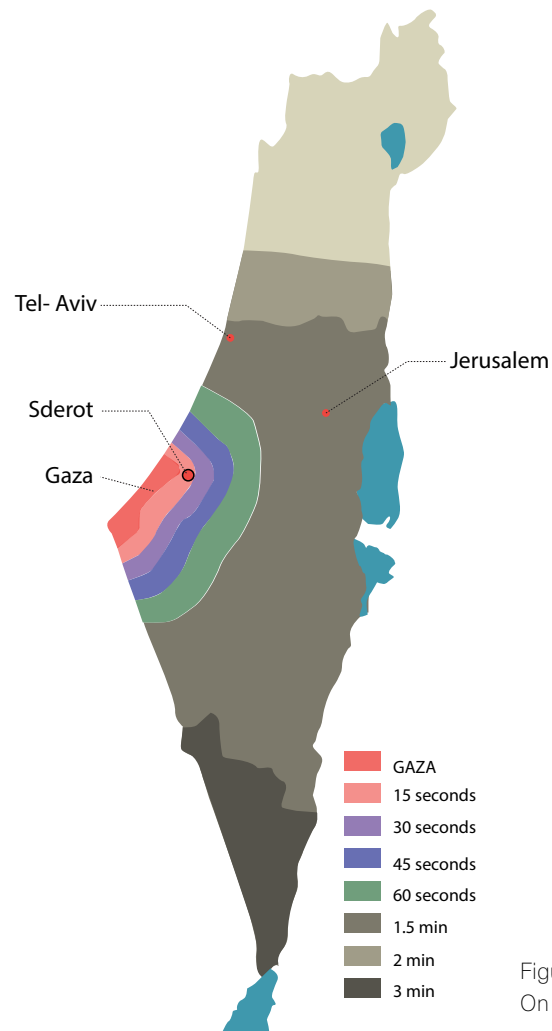
There is no defense system installed to counter rockets fired at Sderot. There way of defense is a warning system called “Tzeva Adom” (color red)—those are the words that are repeated when people need to find shelters. Rockets are fired at Sderot from only a few kilometers away, and the warning system gives a maximum of 15 seconds for the residents to seek cover. (Figure 13)

It is significant to note that because of this small window of opportunity to seek cover, residents actually respond to the initial electronic “click” heard when the alert sirens are turned on, and are already in motion to the nearest shelter or cover when the actual siren is heard a split second later (Avitan, 2016). Trauma psychologist’s note an increased level of tension in almost all residents due to the necessity of being able to reach cover within 15 seconds or be unprotected during an explosion (UN, 2012).

The average human being running to find shelter can go a distance of 50 Meters in that period of time. This is taking into the consideration the time it takes to strategies what is the closest shelter to you. This is extremely difficult to people who don’t know the city very well and are not familiar with the safety procedures.

The fact that from the moment the alarm goes off civilians have only 15 seconds to seek cover created a very special typology of safety with in the city. Starting with retrofitting homes to have a safe space within them (“mamad”), to ret-

rofitting schools and lastly adding hundreds of small square bunkers all over the city public space, to allow for safety.



15 Seconds break down:

- 1 second - understand the situation
- 2 seconds - strategies
- 12 seconds - run

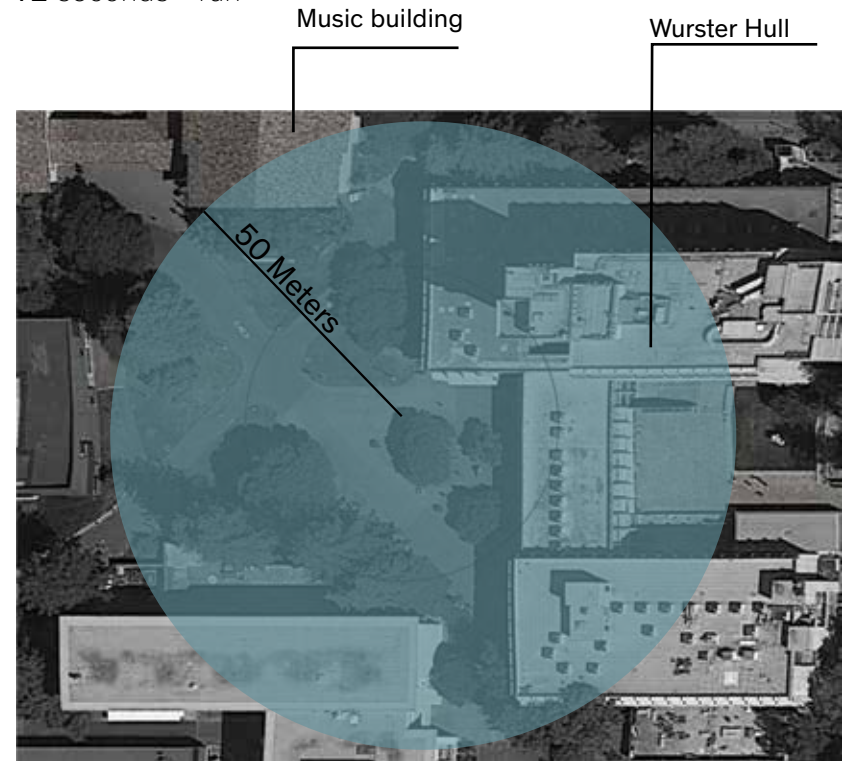


Figure 13- On the left a map of Israel broken down into zones according to time span to find shelter. On the right a circle with a radius of 50 meters centered in Wurster courtyard demonstrating the distance you can go in 15 seconds

4.5.4 Current Sheltering Strategies

4.5.4.1 Private Residency

In 2008 the government made a decision to retrofit all houses with in 4.7 km of the Gaza strip. All in all 8600 houses were retrofitted to have a safe room within them, in an estimated cost of 600 million NIS (\$150 million) (Zaidman, 2009).

By 2011 all houses with in that zone had a safe room allowing the residents to stay in their house when an alarm sounds.

Most government substituted safety rooms have the same requirements. It needs to be a minimum of 9 Square meters with 18-20 cm of reinforced concrete walls and no more than one window. (Figure 14)

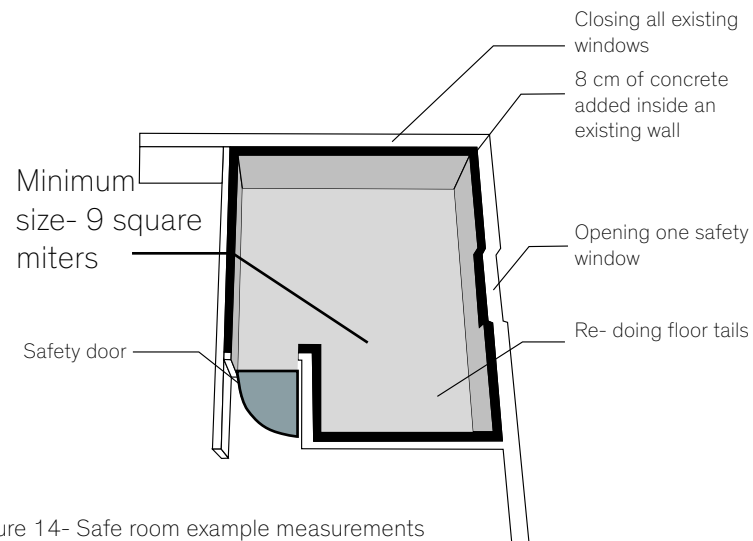


Figure 14- Safe room example measurements

Private Residence



Additional safety room in apartment buildings



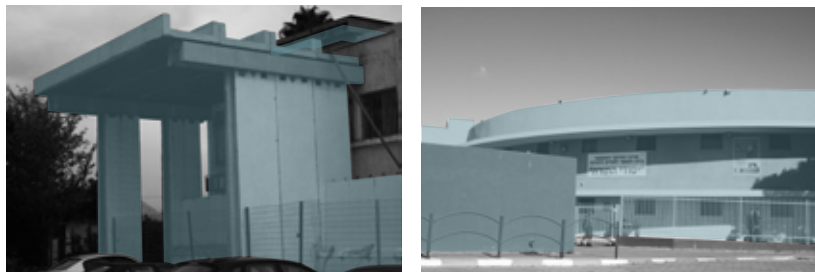
Additional safety room in private houses

4.5.4.2 Schools

By 2011 all schools in Sderot were modified or demolished and re-built according to the safety codes. That allows school to continue even when there is an escalation in the conflict, sometimes making it safer for kids to be in school than in their own homes

From observations it seems like most schools that were not re-built according to safety codes, have some type of concrete and steel canopy above them to prevent missile from hitting the roof, and barricades on the sides to protect the windows.

Public Buildings



4.5.4.3 Public Spaces

Making public space safe in Sderot is a big challenge. To address that challenge the government, along with the IDF (Israel Defense Forces) started distributing reinforced concrete structures throughout the city. At first they mostly used large concrete pipes and army Barricades to create public shelters, but as the conflict continued they looked for a more permanent solution. This solution came in the form of mass produced safety boxes called "Migoniot" ('Migon' is the Hebrew word for protection).

The "Migoniot" are typically 4.7 square meters and can hold about 15- 20 people. The walls are 20 cm thick reinforced concrete and the roof is thicker. There is a yellow line marked on the floor showing where to stand when the alarm sounds, so in case there is a close explosion you will not be hit by shrapnel. (Figure 15)

There are hundreds of structures like this spread throughout the city. They are manufactured off site and brought to the city on trailer trucks and then placed in strategic places. Every year more and more small bunkers are placed in the city creating a unifying sense of neglect.

The Migoniot are now one of the most identifiable features of the city, a permanent reminder of the conflict for both the residents and visitors to the city. In the Israeli collective memory the conflict in the Gaza strip is directly linked to the image of the Migoniot.

There are a few types of Migniot. The types relate to their function less than their physical features, as most of them look exactly the same with slight modification to accommodate the different uses.

Military infrastructure- old military infrastructure, like barricades, brought to the city as a first mean for protection. Most of them were replaced by the manufactured type Migniot but you can still find some when exploring the city.

Bus stop: Most Migniot actually function as bus stops. They are spread on bus routes and have a bench attached to the side of them. They are all the same size and have one entrance.

Public Playground: The prototype is the same but depending on the size of the park and the type of activity sometimes there are two Migniot combined together with two entrances.

Custom made: There are a small number of custom made safety structures in playgrounds. The most known and most attractive one is a warm like sculpture that also acts as a safety structure.

Many of the Migniot are painted by local artists, but it does not seem to help the condition in which they are in. This closed cubicles have become over the years a garbage storage and a urinary. The situation with in all the Migniot I have seen is so bad that people I interviewed said that in times they rather stay outside then go into them and risk dying from the stench (A. Avitan, personal communication, January, 2016).

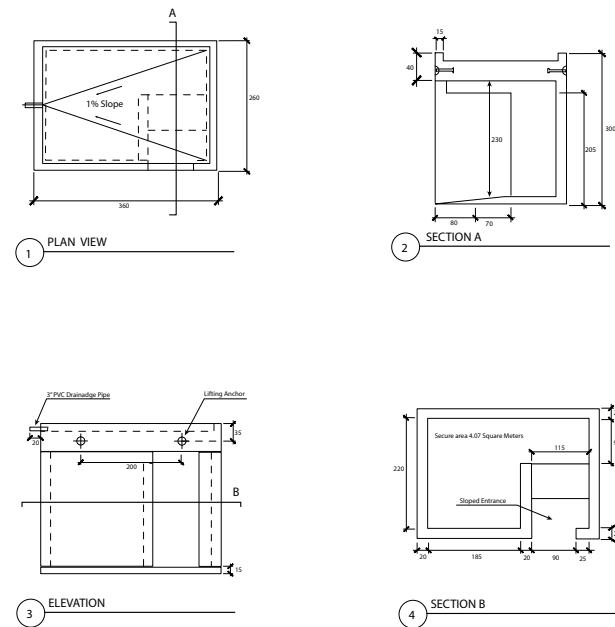


Figure 15- Above, Typical construction document of a Migniot Below- an image of a locked Migniot



A map showing the dispersal of Migoniot in the city in 2015

Migoniot

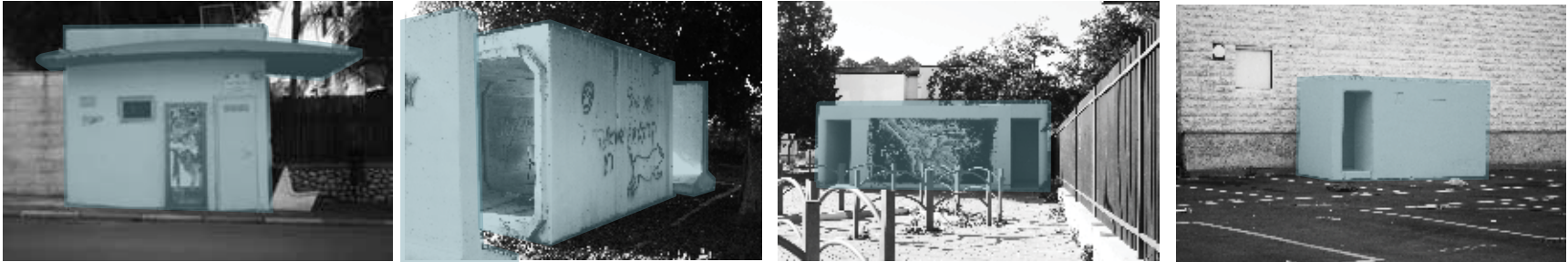


Figure 16- Above- typical Migoniot
Below- the conditions in them

Chapter 5 – Objectives

5.1 Objectives

5.2 Design Objectives



5.1 Objectives

Conflicts have a pervasive nature and as such they consume all that is “normal” in a city. Living in close proximity to Sderot, I saw firsthand how devastating a conflict can be to a city and its population. That got me thinking about the role of landscape architecture in cities of conflict.

In this profession we learn and use many tools with the idea that the changes we make will benefit with the environment in a meaningful way. That could be either the human environment or the ecological environment we aspire to improve. What I am trying to portray is that those tools have a meaningful role in the creation of a livable city in spite of existential threat.

The grand objective of this thesis is to show that landscape architecture might have a role in mitigating the devastating effects armed conflicts have on cities and their public life. As stated before, conflicts and conflict infrastructure have a way to generate spatial extremes, which in turn change people and the way they ‘use’ the city. Perhaps there is another way to think of safety without using militarist infrastructure and alike. In order to explore those possibilities there is a need to account for many other layers that help generate a public space: what people need, how one can create a feeling of psychological safety, and how to manage weaving the shelters within the urban fabric in a more natural way.

During my preliminary research on the immediate effects conflict has on public spaces, my first idea was to re-design the current shelters. Thinking that if the shelters would be nicer and better incorporated within the fabric of the landscape, they would allow for a different interaction with them. This thought was quickly changed during my site visit, where I was reminded that the problems in this city, as is the case in many other cities, are rooted in a much deeper and long lasting problem. All those were just intensified with the effects of the ongoing conflict but would not be resolved by simply rethinking safety structure.

Every city has its history. Sometimes, conflicted cities seem as though the conflict is the only driving factor for change, but this is usually not the case. It is important to try and put the conflict aside and understand if there is another reason why public spaces in the city do not provide what they intend to provide. And so, instead of immediately addressing safety issues in the city, I am addressing this as a problem that has many layers, safety being only one of them.

From analyzing the current condition in Sderot, it became clear to me that the city lacks an overarching planning strategy. At this point there is no need to figure out if this is a result of the conflict or unfitting initial city planning; the important thing is to try and come up with a few basic strategies that

would be implemented in the city scale.

After drawing conclusions of the city scale, I will focus on one area and explore it in greater details. I will incorporate details of safety solutions in public space. My objective is to have, by the end of this project, a new typology of safety that later on could be taken from the small scale design and be implemented in the bigger city scale.

5.2 Design Objectives

According to Gehl (2011), the design typology of the “town scape” – characterized by single family housing area and gardens for private outdoor activities – has reduced the amount of public life between buildings. This is to some extent the result of street design, auto traffic, and a wide dispersal of people and events (Gehl, 2011). In more than one way, this is the story of Sderot, with the conflict adding greater constraints on the feasibility of public life.

To address this I came up with three components that help framing my objectives: community, connectivity, and safety. Those key elements will lead me later on to develop a set of strategies for the city master plan and the site specific design.

5.2.1 Community

A sense of community is an important idea one needs to explore when designing. In this specific case a strong community can act as a mitigating factor between the conflict and its psychological consequences. .

The prevalence of post-traumatic stress in Sderot is an alarming number. This is specifically disturbing facing the contrast

in percentages of PTSD between Sderot and the collective agriculture communities surrounding it.

Psychologists researching this area suggest that the cause is Sderot's characteristics: an unstable community with high rates of unemployment along with limited access to economic and psychosocial resources, which are making some citizens particularly vulnerable (Hadad, 2008).

Another factor that may contribute to the high rates of psychopathology is a sense of abandonment or betrayal by the government, which may undermine the resilience of the community members (Diamond, Lipsitz, Fajerman, & Rozenblat, 2010). By contrast, residents of agriculture communities may feel sufficiently supported via their collectivist culture.

Taking those factors into consideration heightens the need for a stronger community structure in Sderot. Specifically, public spaces that promote gathering and more opportunities to meet, listen and engage with other people. Today, most residents spend their time indoors and have limited connection to their social environment. However, by simply allowing for more opportunities to meet other people, a stronger community could grow. This is not the only benefit; a well-designed public space can also help with the feeling of abandonment, giving the citizens something that they can be proud of.

5.2.2 Connectivity

Connectivity needs to be explored both between the neighborhoods as well as within neighborhoods.

The suburban circulation pattern in the city hinders pedestrian movement, thus not allowing for connectivity within neighborhoods and between them. Because I find it unrealistic to change the entire circulation pattern in the city, I will address this issue by creating a circulation hierarchy that changes the car-oriented nature of the city; a hierarchy that will create differentiation between fast moving traffic and pedestrian, intertwining slow moving traffic and pedestrian paths.

Another feature is visual connectivity. Creating visual connectivity between the main circulation routes and other uses, such as parks and recreation areas. More visibility will create greater connectivity between circulation and activity.

5.2.3 Safety

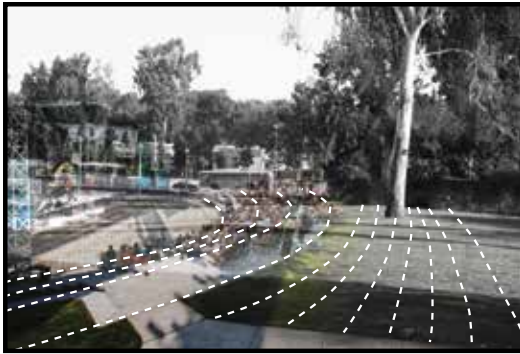
When discussing safety, there is a need to consider both the physical and the psychological feeling of safety in the city. In this sense, safety is not merely by placing a safety structure every 50 meters. There should be a more inclusive consideration for the safety people feel regardless of the conflict. People need to feel safe walking down the streets, for example when crossing the street or when walking on pedestrian

circulation routs. Feeling and being protected from missiles is just a part of the general sense of safety Sderot's residents should have. This overarching feeling should be designed in a way that will both address their psychological needs and will not disrupt the daily routine more than necessary.

The sheltering from the conflict would be discussed in length in the site specific design, but as for the feeling of safety on the streets and in public space there is a need to reconsider what makes people feel safer. Gehl (2001), stated that the thinning of activity in public space brings with it crime and then everyone stays off the streets. Therefore, a feeling of psychological safety might also result simply from having more having more people in a given space.

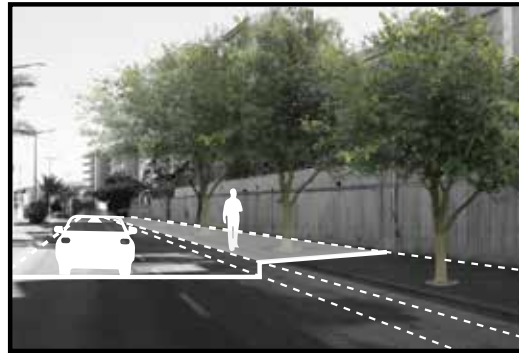
It does not mean that it is only a factor of the number of people outside that would foster public life. Another important factor is the amount of time people spend outside. If people are tempted to stay in the public spaces for a long time, a few people and a few events can grow to a considerable activity level (Gehl, 2011). So, public spaces in the city should put an emphasis on programming for lingering and activity. Those should accommodate multiple groups of users and allow for different types of activities to happen next to each other.

Community



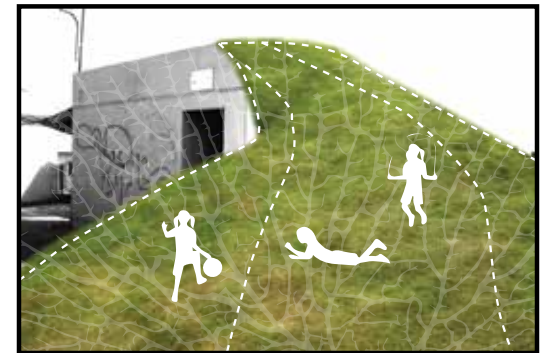
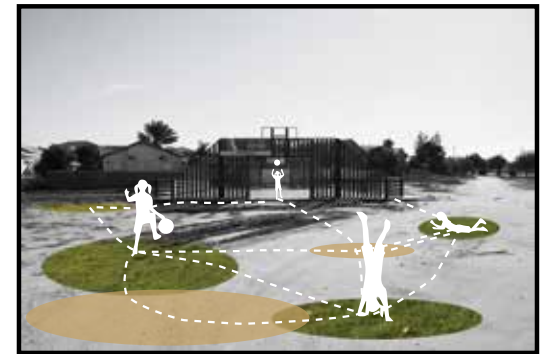
Promoting a stronger community by allowing greater opportunities for community activities

Connectivity



Visual connectivity as well as promoting walkability in the city

Safety



More activity and more people will restore the sense of personal safety. As for sheltering, introducing an integration of safety within the landscape

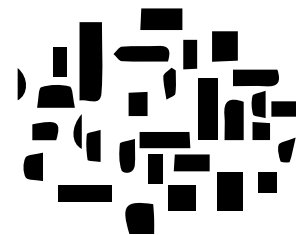
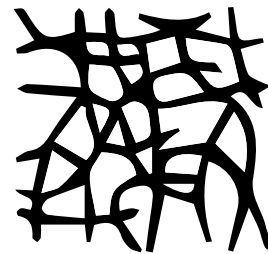
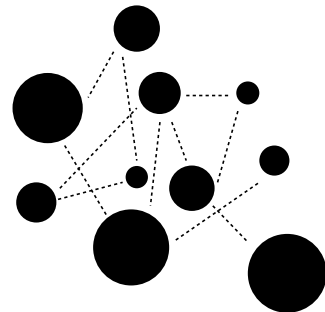
Chapter 6 – Master Plan

6.1 Assembly

6.2 Circulation

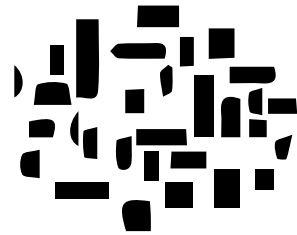
6.3 Diversity

6.4 Schematic Master Plan



- To address the global design objectives of fostering a stronger sense of Community, Connectivity, and Safety I will use three strategies - assembly of uses and users, diversity, and circulation.

6.1 Assembly



Many things happen in Sderot, but both people and events are so spread out in time and space that the individual activities almost never get a chance to grow together to larger, more meaningful and inspiring sequence of events. Children would rather stay home and watch TV because it is dull outside and not as safe. Older people don't find it particularly entertaining to sit on the benches, because there is nothing to see (Gehl, 2011)

Taking the notion of assembly when analyzing the historical design of Sderot, it seems that they followed a good planning strategy. The design prototype of the development towns incorporated central commerce and civil activity in the middle of the city, as well as one small center for each neighborhood, hoping that they will be the center of all social activity in the city

Unfortunately, when looking at the planning of the city today it seems like this strategy was lost. It is possible that it is due to

the new threat that the city is facing, but it is more than likely due to a non-existing overarching city plan.

In the current situation assembly can be achieved in two ways- integration of activity and reduction of same use spaces in close proximity to one another

Integration of activities- This means that various activities and categories of people are permitted to function together or side by side. Segregation oriented planning is illustrated by functionalist city structure, in which separation of unlike functions was the goal. The result was a city divided into mono-functionalist areas (Gehl, 2011). The goal of the design should be to remove the borders between different functions and groups of people. Each activity is given a chance to work with another.

To this extent the city at its current situation creates isolation of activities. This is most noticeable when looking at the integration of schools in the city. Almost all schools are separated from the general circulation routes and are located at the outskirts of neighborhoods, surrounded by vacant land at least from one side. This strategy does not allow for the children to be an integrated part of the everyday activity in the city.

Moreover, other high profile buildings such as the public library, banks and the civic center are not designed in a way that will incorporate other forms of activity in their close proximity.

Therefore, a strategy that I am implementing is clustering of activities. More specifically, in each neighborhood one should

consider the current land use pattern in order to design a clear connection route or organizing principle that would allow for connectivity between those uses. One example could be designing future parks in close proximity to existing shopping areas and schools. That will allow for diverse population to engage with one another and strengthen the sense of security and community.

Another issue that needs to be taken into consideration in regards to integration is the amount of vacant land in the city. This damages both the feeling of safety and the integration of spaces in the city fabric. Currently the city has an expansion plan in terms of new neighborhoods being planned in the outskirts of the city. While new growth is welcomed there's need to be a consideration for abundant land within the city first. My design address that by creating housing projects in vacant lots, as well as turning a few of them to a central neighborhood destination.

4.6.1 Minimizing Overlap in Uses

The dispersal of many small neighborhood parks throughout the city is neglecting the fact that this is a low density city, and therefore the more parks you have the less people you will have in each one and that might hinder the ability to generate activity.

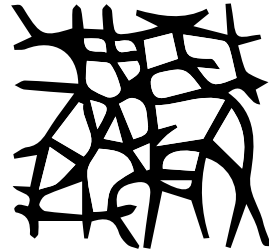
To address this my strategy is to reduce the number of small un-used neighborhood parks and create a few bigger, well-maintained, well-programmed parks located in places of higher activity and higher visibility. Ultimately each neighbor-

hood would have its own central space for recreation, commerce and relaxation, and all of those neighborhood parks would be linked together to create a network of open spaces along the main circulation path in the city. This circular corridor will allow for better connectivity and community within each neighborhood as well as help integrate the city as an all.



Figure 17- assembly- creating a central area for each neighborhood that will include many types of activities

6.2 Circulation



Among all the activities that take place in the public domain, traffic is the most comprehensive. Separation of different modes of transportation from each other creates segregation. Continuing with the idea of integration there should also be integration between different modes of transportation. The fact that traffic to and from houses is the most comprehensive of all outdoor activities in residential areas is a good reason for seeking to integrate as many other activities as possible with traffic (Gehl, 2011).

A way to create that integration is by creating a clear hierarchy of road network within the city. Taking one typical section of the street one can clearly see an emphasis on car circulation.

To address that I will integrate slow traffic with streets that are clearly designed as pedestrian areas. In those cars would be forced to proceed at slow speeds between the established staying and play areas. That would be achieved by narrowing down existing vehicular circulation to create slower moving traffic. This is secondary to creating wider, shaded and well maintained pedestrian circulation routes.

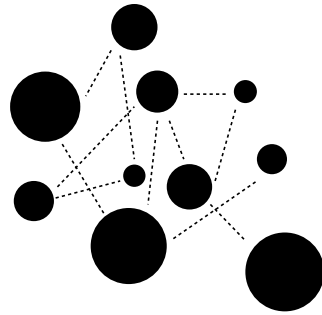
In addition, I am proposing a main circulation path going

through all seven neighborhoods. This circular path would have most activities spread along it and will be used as a corridor of both activity and movement. To that main circular road there would be secondary circulation roads that connect each neighborhood to the corridor.



Figure 18- circulation- creating a main circulation route going through the neighborhoods connecting main nodes of activities

6.3 Diversity



Cities are very diverse in terms of population and in term of uses. Although there is great diversity in Sderot's population the population is mostly separated into different neighborhood.

There is a neighborhood were most Ex- Soviet immigrants leave and they have their own stores and TV channels. They are not widely integrated with the older population of the city. Another distinct group in the city is the students from the neighboring collage. Most of them are not residents of the area and come from different places in Israel. The students live in the same area and have opened their own pubs and restaurants. They have a great positive influence on the city but there contribution is limited to their close surrounding.

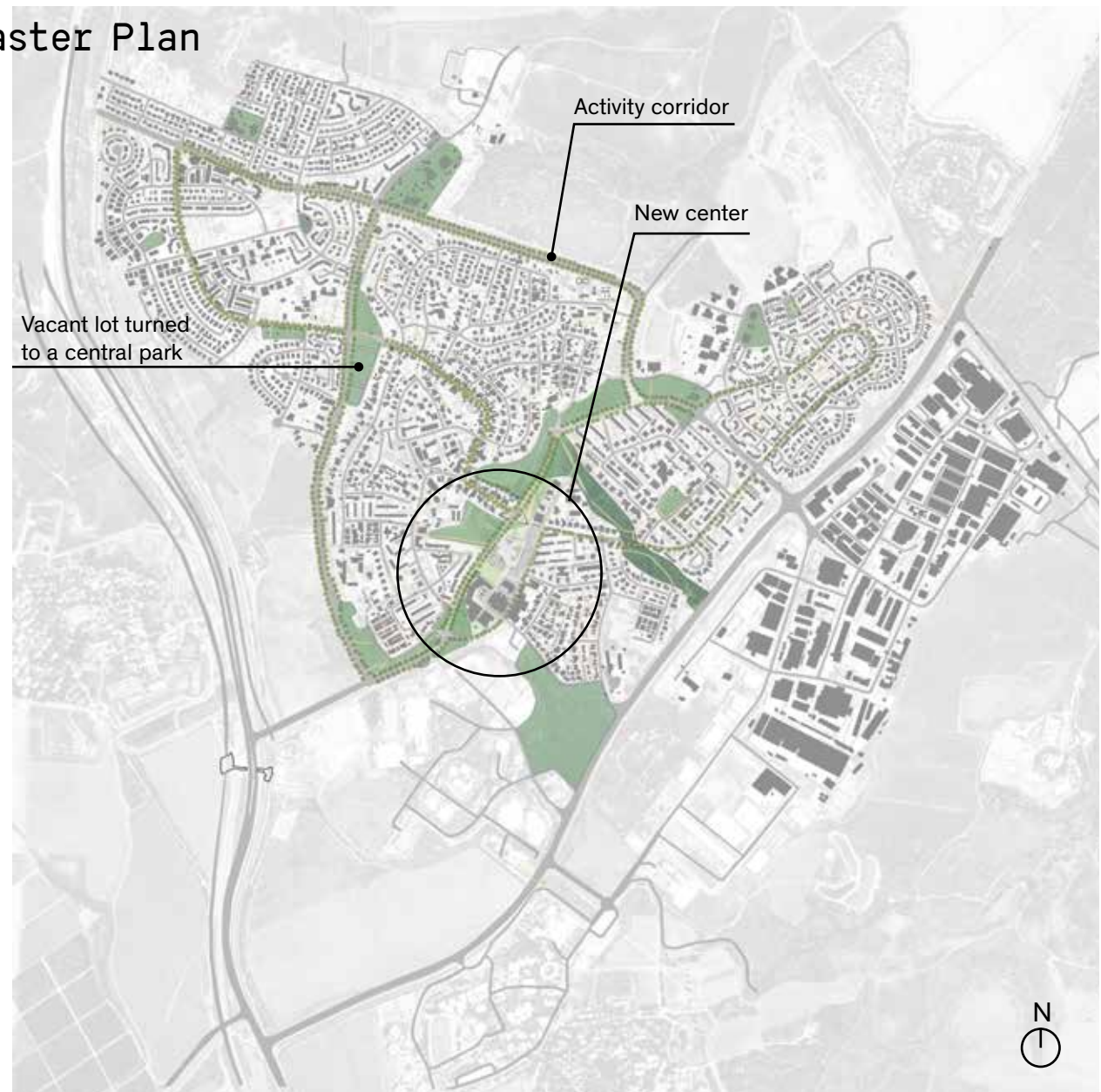
In this sense better integration of the population could be achieved by creating central spaces that would cater to multiple users. An example to that would be explored in the next chapter with the site specific design.

Diversity also means allowing for diversity of uses. Current public spaces in the city are very monolithic. There is no diversity of uses within the parks and no diversity between them.

They all follow the same design patterns of a big lawn with a few places to sit. As for activities, they all offer the same play options and recreation options. There is a lack of imagination in the design of places for kids and it doesn't allow them to actively explore the environment.

To that extent there needs to be better programing with in the parks allowing for multiple types of spaces (e.g. Nature parks, adventure parks, skating, relaxing, eating, etc.) These diversity of uses in the parks should also be integrated with diversity of uses like commercial zones, food, etc. Diversity of uses will accommodate to different needs of different parts of the population but in close proximity to one another. That will generate a greater diversity of people in a given space and might help in the creating of a closer community.

6.4 Schematic Master Plan



Chapter 7 – Site Specific Design

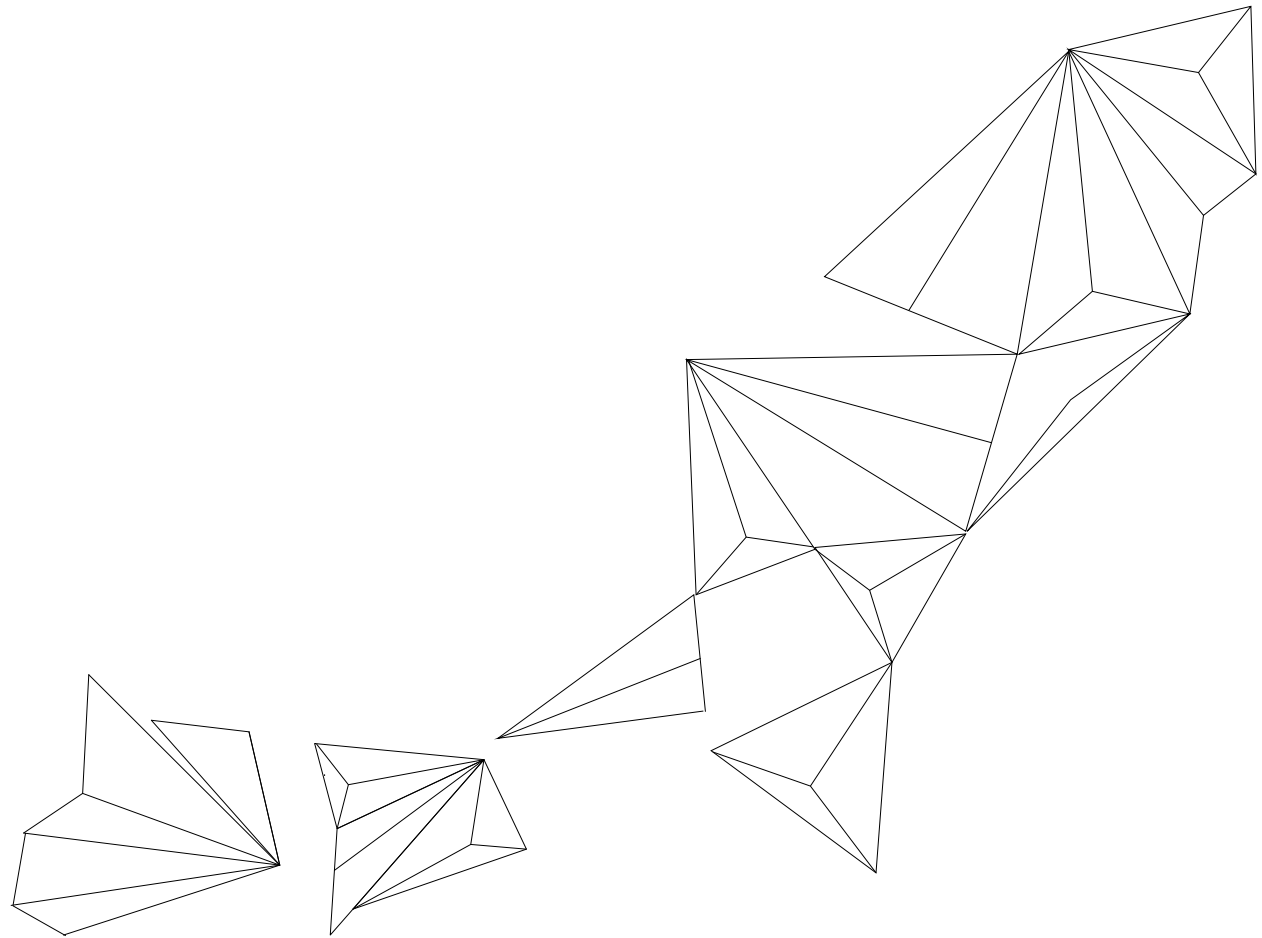
7.1 Introduction

7.2 Constraints

7.3 Strategies

6.4 Formal Logic

6.5 Design



7.1 Introduction

An exploration of the city revealed that in order to achieve my objectives a central city space should be created. Both in my analysis and in my interviews with civilians from the city I identify the need for a central gathering space that will combine outdoor activity, culture, shopping and amenities. All of them mentioned the “old” center as an ideal place for centralizing new forms of activities.

Currently the old center is increasingly abandoned and has poor circulation patterns. It is rarely been used for the purpose of staying or using public space, and mostly encourages fast movement (usually by car) from one place to the other.

During my site visit I felt that although the center has many activities and amenities in it, it's very segregated and deserted. Before moving to the design phase I will do an analysis of the existing conditions in the site to try and understand what are the missing components that prevent the center from being a vibrant public area.

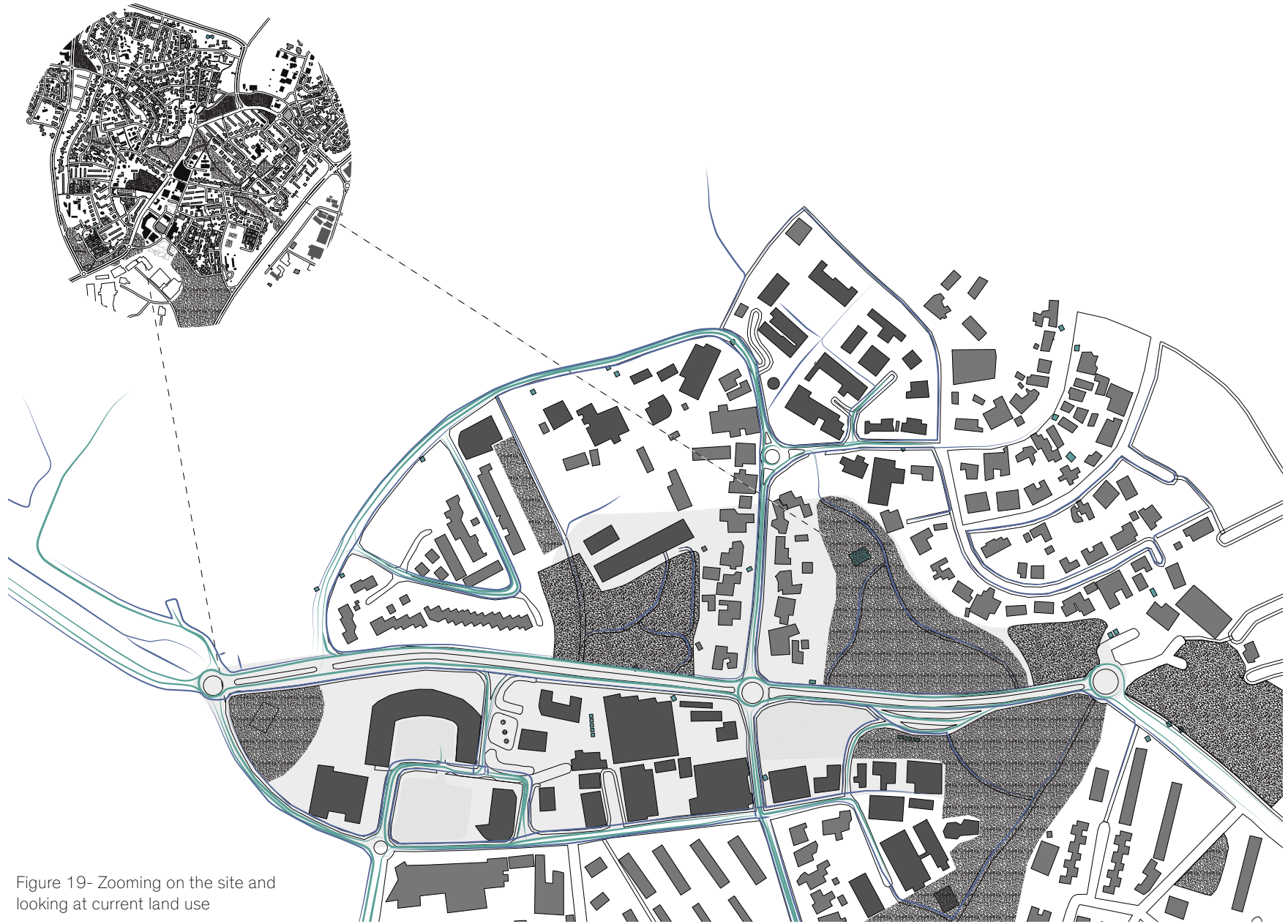


Figure 19- Zooming on the site and looking at current land use

7.2 Constraints

7.2.1 Public Parks

Analyzing the existing conditions in the site revealed a monolithic use in the parks. There are two major parks- Gan a-Hamisha and Azrieli park. The first contains a large lawn with a small meandering path going through it. On the south east side of it there is a small outdoor workout space. Benches are spread along the path as well as a few lighting features. The big lawn is never used except for passing through it and the benches are rarely used.

Azrieli Park is a large Eucalyptus grove with some picnic tables and a meandering path. There is a dry creek running through

the park with two small bridges for pedestrian crossing. Even though I visited during a rainy winter the creek mostly had sewage running through it. In this park there was even less activity.

The two parks are in close proximity to one another, with a four lane car road separation them. Although physically close there is no connection between the two—no circulation and activity.

The last great investment in open spaces in the city is the new pedestrian boardwalk at the Eastern entrance to the city. The boardwalk was built in 2013 but is already in stages of degradation. This seems to be another example of lack of planning in terms of both the location of the boardwalk and the activities it provides.



Figure 20- open spaces in the city center. Both green open spaces and vacant lots

7.2.2 Circulation

: There is a clear vehicular circulation emphasis in this area. The main road crossing the center has two lanes of traffic to each direction, with only three cross points in this interval. The roads separates the center into two parts. The lower and the upper.

The vehicular circulation emphasis is also apparent in the amount of parking space in this area. There is a parking lot in close proximity to each zone of activity allowing for big amount of cars to enter the center. As a result people are discouraged from walking between different areas in the center.

Pedestrian circulation is not convenient. As mentioned earlier there is only three cross walks allowing to cross the main street separating the center into two distinct areas. The vehicular traffic is very fast and so crossing the street is unsafe. Besides the lack of pedestrian connectivity between the upper and lower areas there is a lack of circulation connectivity within them.

The lower part is mostly used for commerce in the current conditions and there are three distinct areas with in it. Each area has its own parking lot, and road leading to it, but as far as pedestrian circulation there is no direct connectivity route between them. This reinforces people's tendency to drive from one place to the other.

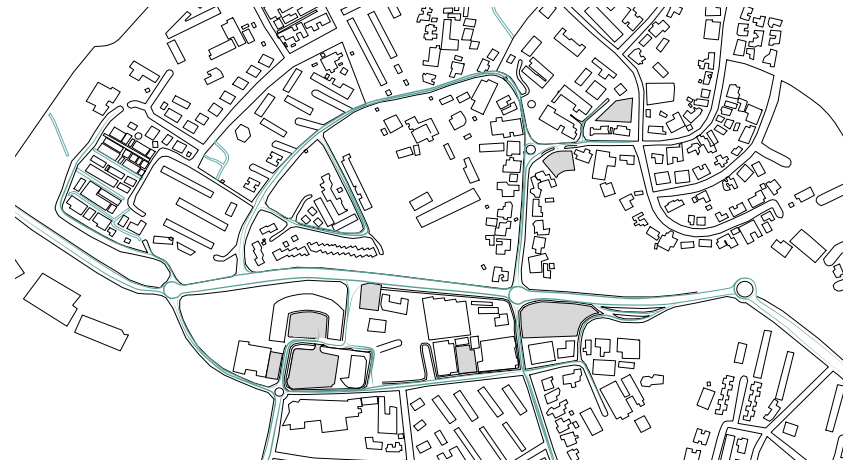


Figure 21- Vehicular circulation in the center and parking lots

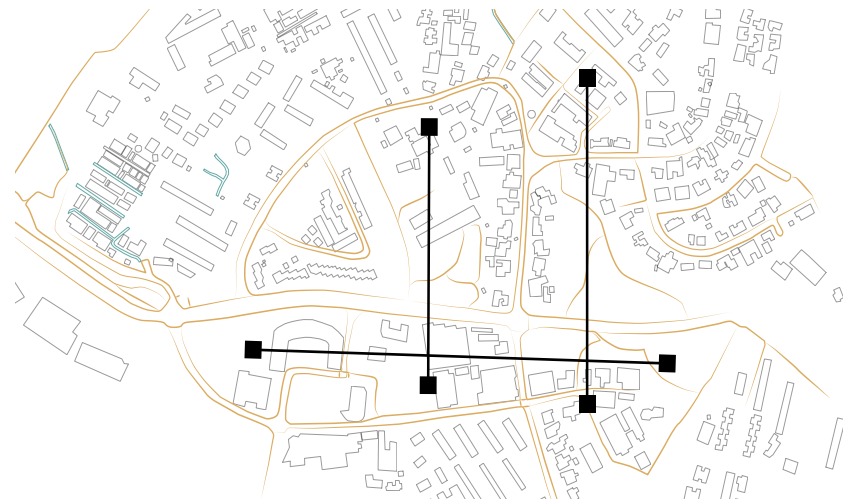


Figure 22- Pedestrian circulation showing lack of connectivity

7.2.3 Land Use

The center is currently broken down to three areas- the lower part, the upper left and the upper right. (Figure 21)

To the west there is Gan a –hamisha and to the east a vacant lot on a slope with two apartment buildings made out of containers built and used by students.

The lower area is broken down into three distinct areas with no connectivity between them. To the west there is the only cinema in city, next to it two buildings allocated for people with disabilities or children that are from broken families. Right next to it is the city emergency room and clinic. Across the street, in the central parcel, you can find an old, half vacant, shopping area with small shops distributed across a long corridor. Behind it there is an open air market that runs regularly.

In the East parcel there is a newer shopping center that includes a supermarket, book store and a few small clothing stores. And has the biggest parking lot in the area.

The center has a clear problem of overlapping uses. The two big parks are in close proximity to one another and both are not used. There are two shopping areas an older one and a new one. The newer one was build right next to the old one with complete disregard to its existing uses. Moreover, There is no direct path of travel between the two shopping area.

This also creates a homogeneous use pattern in this area, not

allowing for diversity in activity and population. Although there is a lot of potential with the high profile public buildings in the center people tend to move from one building to the other and not linger in public space.



Figure 23- Land Use

7.3 Strategies

7.3.1 Assembly

Creating three different areas of activity each one with a distinct character. Each zone will have its own overarching function but would also be broken down to smaller spaces to allow for a hierarchy of spaces and multiple user groups.

The upper west side would be the music/culture area. This area will include a new music school located in close proximity to an existing elementary school. Next to the school there would be a small amphitheater for performances. This area is intended to strengthen the well-known music scene in the city and create a stronger community involvement in this.

The Upper East Side would be dedicated to community generation, using the existing student housing to create a stronger bond between the students and the local population. This zone will include a community garden and a new community center.

The lower area would be the center of activity and would include culture, therapeutic uses, commerce and recreation. All those activities will correspond to the adjacent existing uses and the needs of the users.

This strategy will allow for greater connectivity with existing uses and those in turn would increase the activity in the space. The diverse amenities in this area will draw diverse

users that will share the same spaces but can choose different uses according to their preference.

Another feature the new center will have is a transportation hub. That will allow for greater accessibility to the center and larger number of people in this area. In this designated area there will also be a parking lot allowing people to reach the area with their car, but parking it in the outskirts and walking to the different areas.

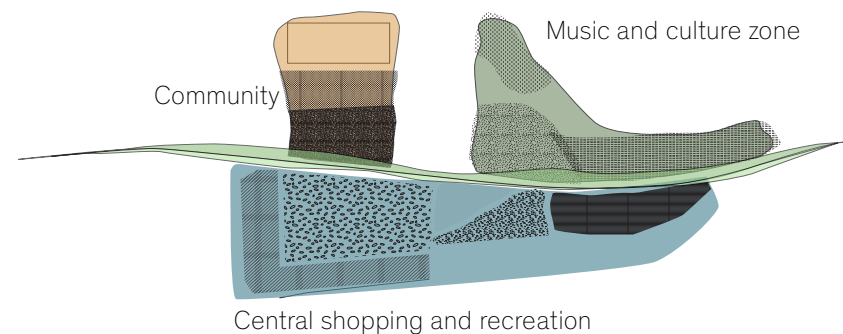


Figure 24- Center broken down into distinct zones

7.3.2 Connectivity

The circulation pattern will change drastically. The main road separating between the upper and the lower part would be narrowed down to allow for only one traffic lane for each direction. The sidewalks would be widened, repaved and planted with shade trees. Wider and safer cross walks would allow for better connectivity between the parts. In addition a clear pedestrian circulation route would connect all parts of the design.

Vehicular circulation within the center would be limited to the outskirts and there will be one large parking area by the new shopping area and a smaller one closer to the clinic for people who need to park in close proximity to it.

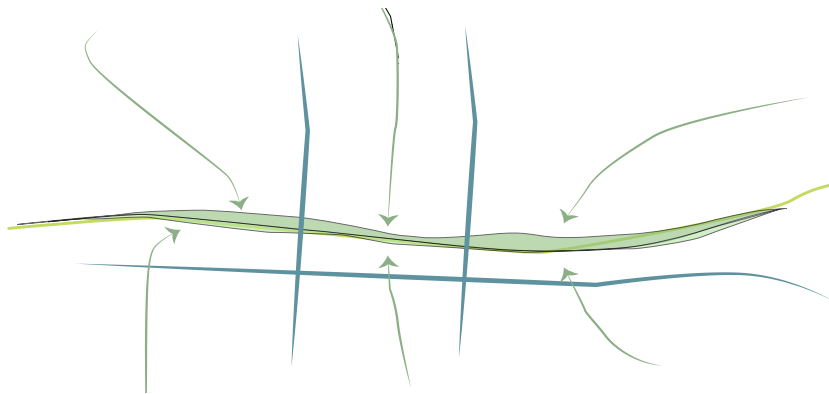


Figure 25- connectivity to the center and within the center

7.3.3 Flexibility

The design should take under consideration a few critical situations in the conflict continuum. Each one of the situation entails its own challenges and they all need to work together within one design.

- Time of escalation in the conflict - During times like this most of the city is paralyzed. The Alarm sounds between 8 to 15 times a day, which makes it very hard to maintain a daily routine. It is possible that in times like that the main element that the space could offer would be its ability to provide safety, ideally to a large number of people.

- Time of sporadic missiles - This represents the majority of time. Addressing times like this would be the main focus of my design. Thinking about ways to integrate access to open spaces as well as fast access to safety.

- Time of peace - As one can only hope, the conflict between Israel and Palestine would come to an end. When that happens these artifact of war would get an entirely new meaning.

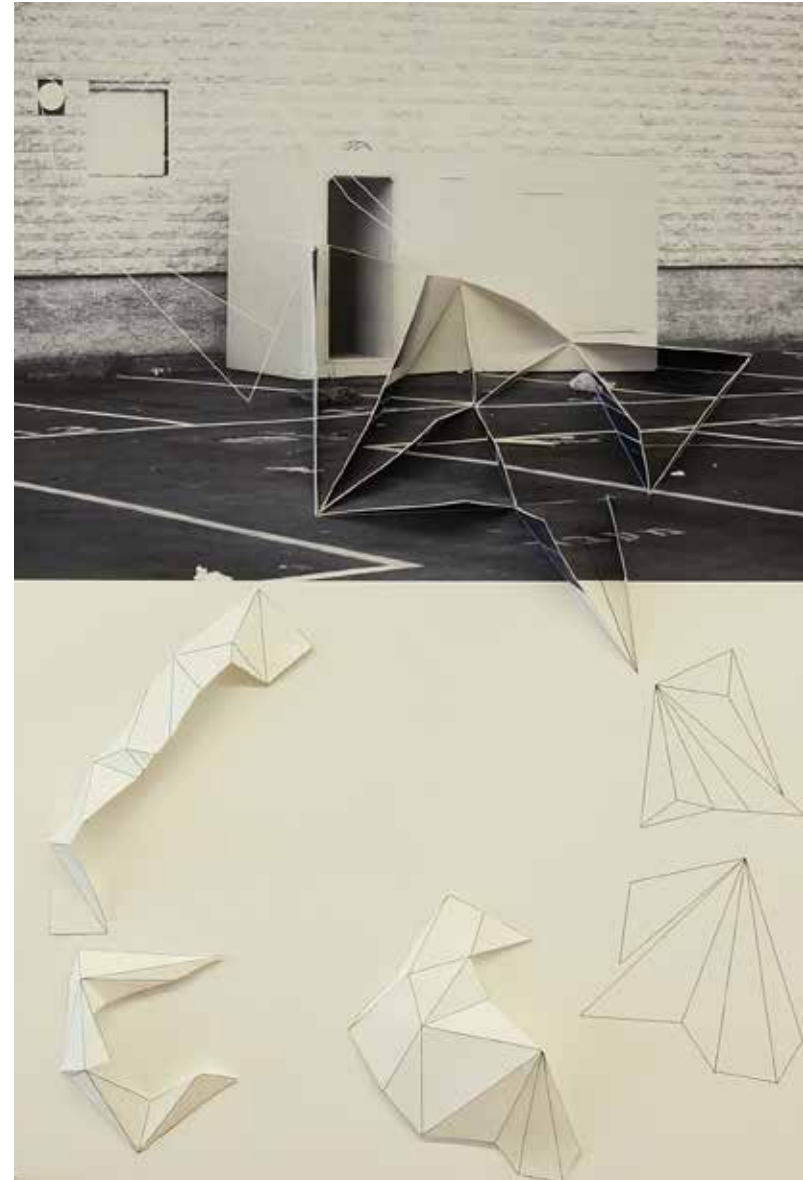
The way I choose to approach this issue is by creating a multi-functional design where sheltering the people is just one function performed by the sheltering structures. Understanding that those structures would be permanent structure the need to consider form and uses of each of the structures becomes crucial. So as the needs to create a multi layered design that will accommodate many uses.

7.4 Formal Logic

The current strategy of adding shelters without considering earth and space creates isolated forms with a very strong and discomfoting presence. Therefore I started looking at different ways to make the shelters more integrated with the overall landscape, and found that the use of earth might be a solution.

Looking at historical precedents of earth works used both for safety and for aesthetic reason I found myself drawn to the idea of combining the strength of the concrete with the natural feeling of earth. This juxtaposition can create interesting spaces that would have the sufficient strength to protect as well as the flexibility of earth to create usable open spaces both on top of the concrete and below.

The formal logic driving my design is -folding the landscape. Playing with the terrain can create shelters of various sizes. Not only that, folding and manipulation of the surface can also create safety structure that ingrate and assimilate in the larger scheme of the landscape. This strategy might help give the space a feeling of harmony that is so missing in the current condition. My first study models helped me come up with a few design typology.



7.5 Design

7.5.1 Design Typology

From studying and exploring folded paper as well as different programming I came up with a new typology for safety in the city.

These four typological forms can be implemented in different sites in the city, each one with different functions to create a verity of spaces and programs. Each one of these typologies have its own unique relationship with the land that is creating it.

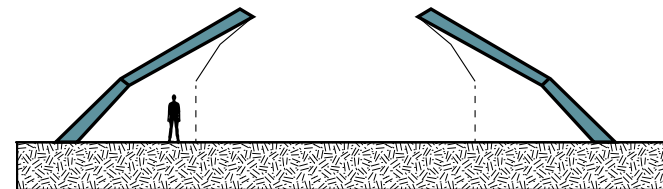
The Cave- embraced by the landscape



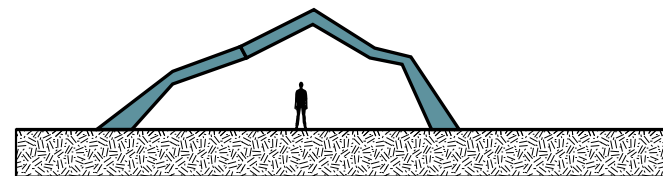
The Wave- revealing the landscape



The Passage- framing the landscape



The shell- landscape in layers

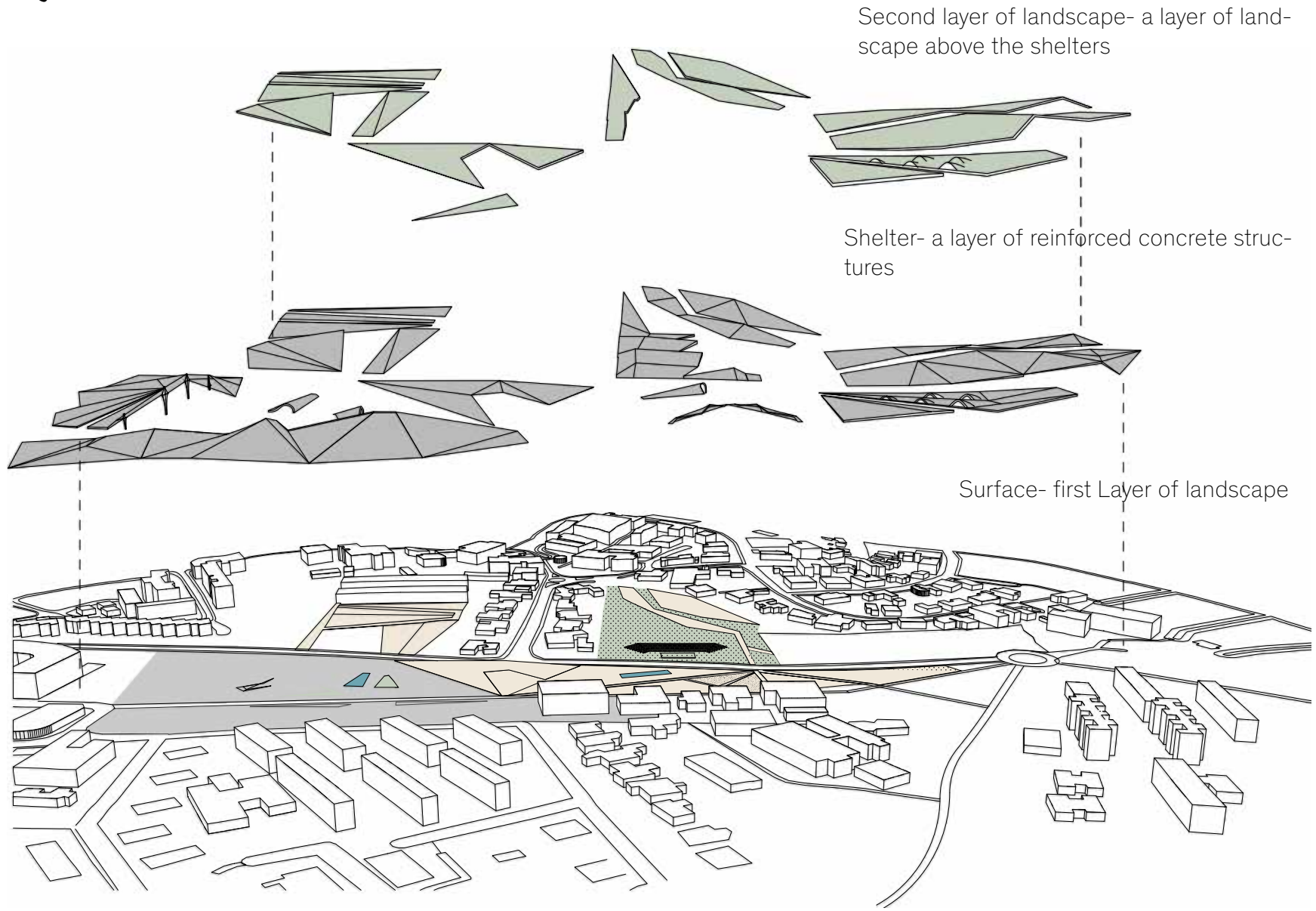


PLAN

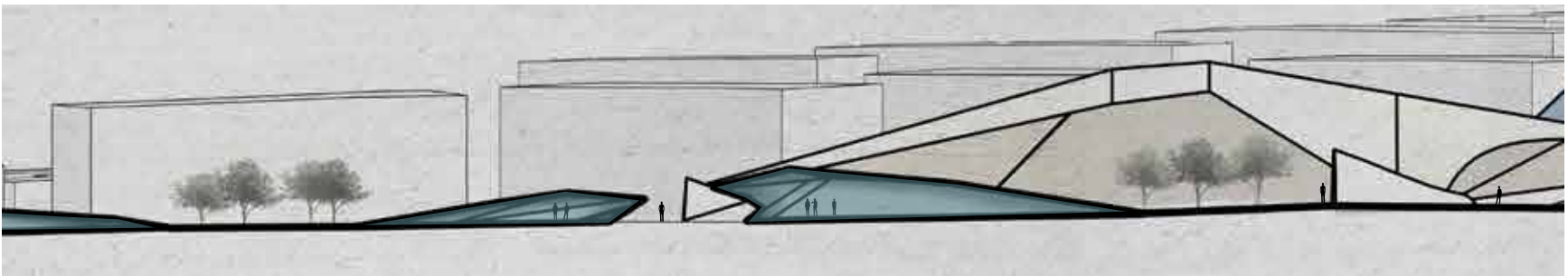
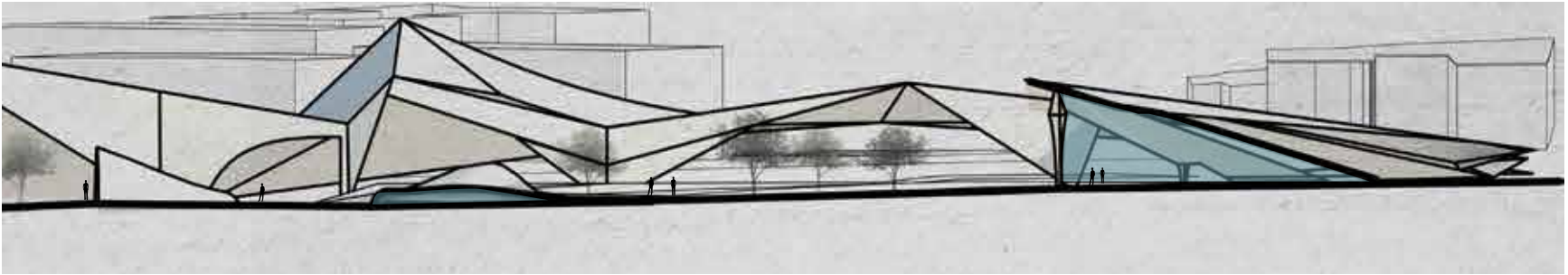




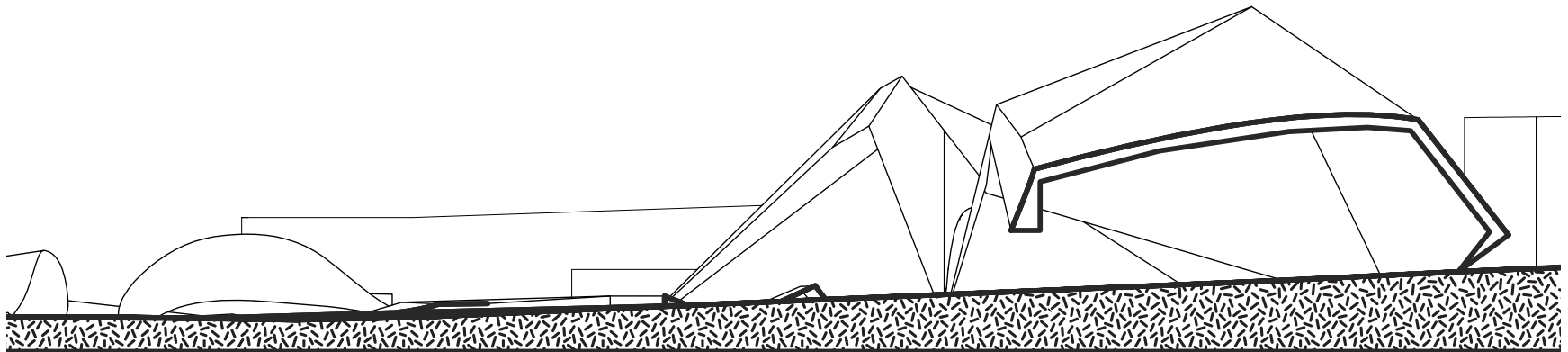
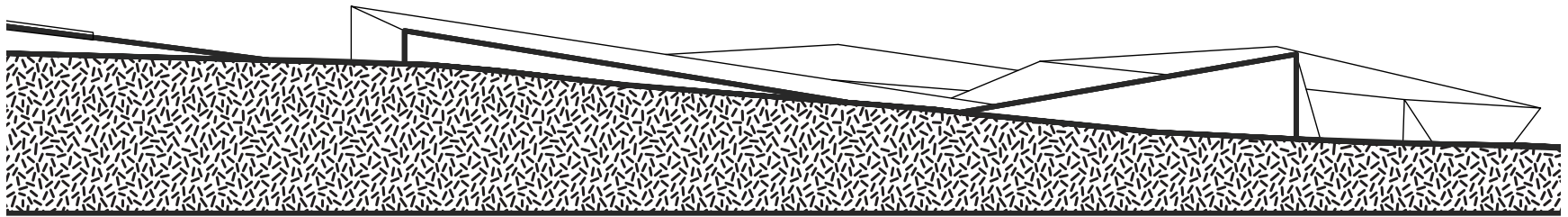
Layered Plan



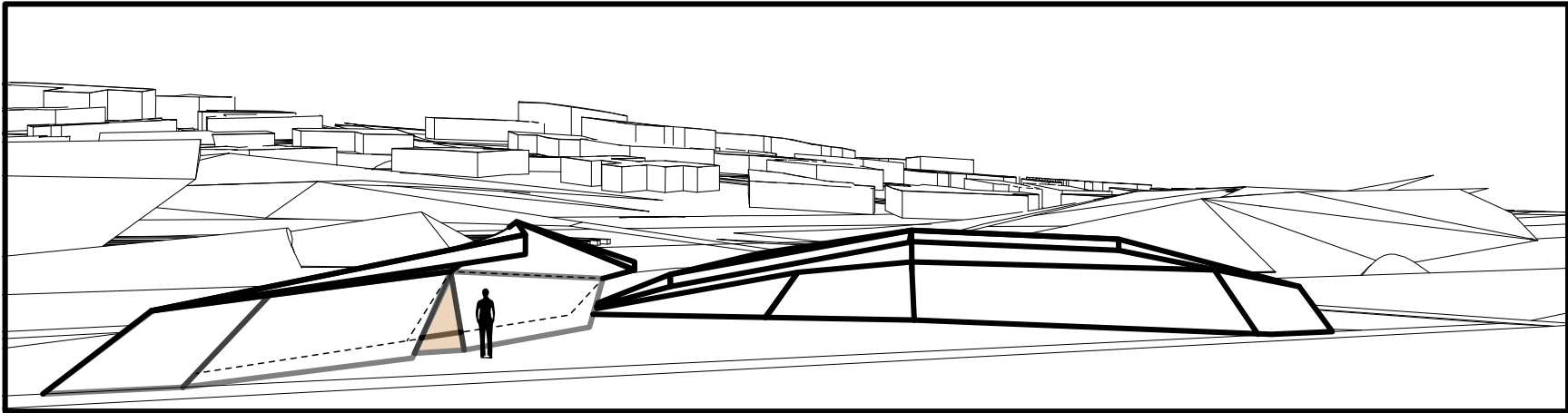
Section A



Section B

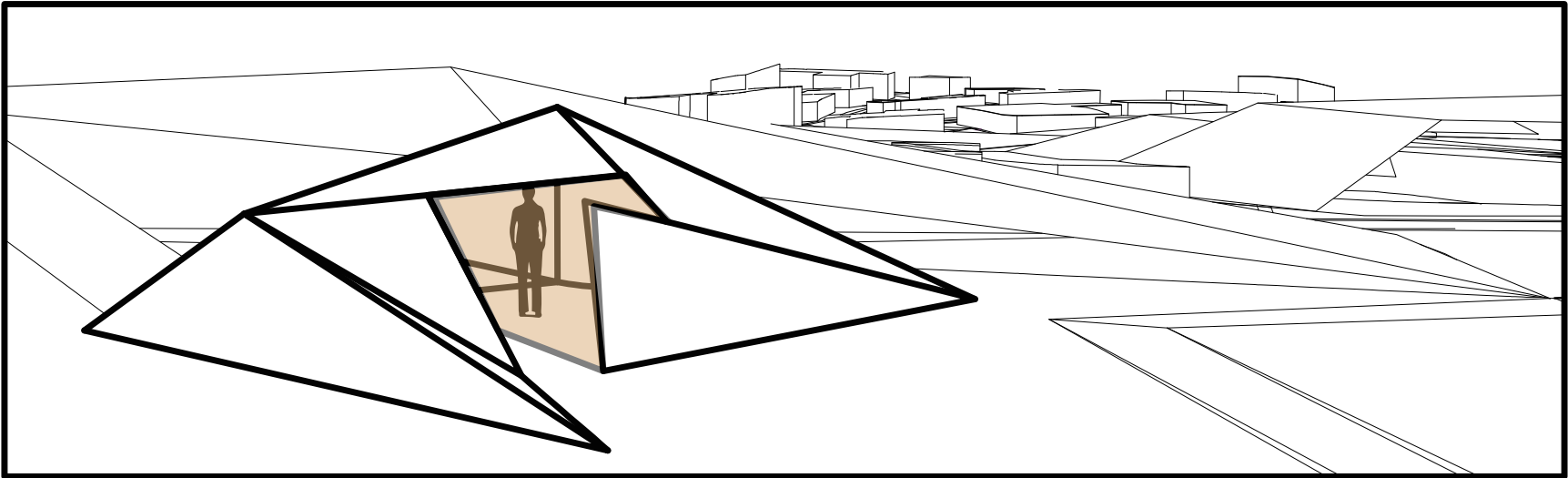


Implementing Safety Typology- Vignette one



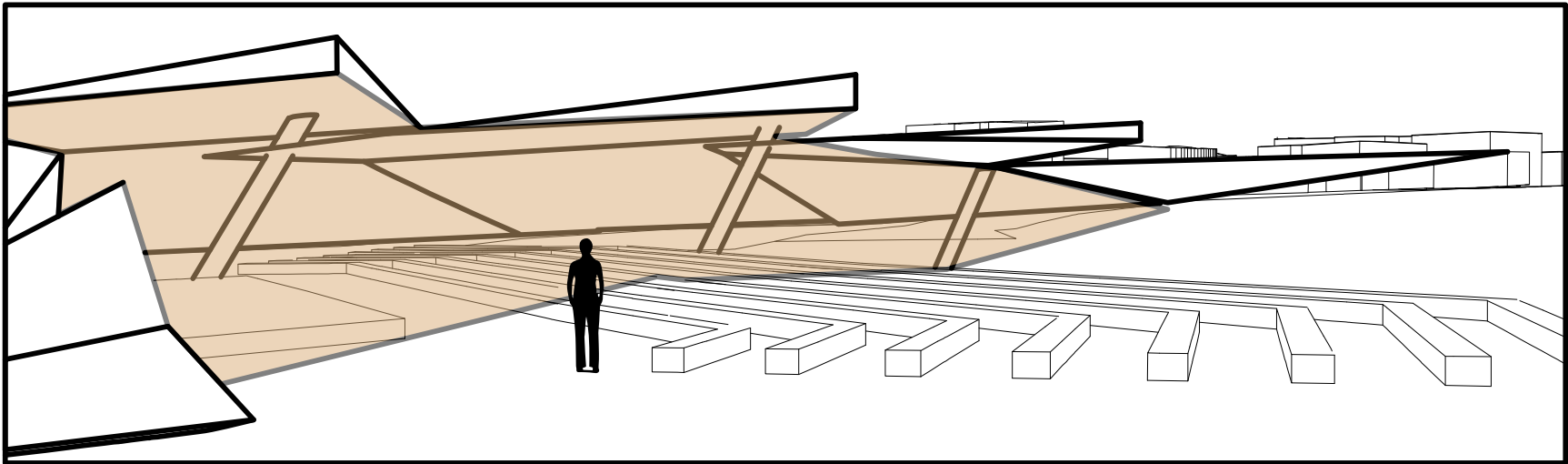
Vignette showing the therapeutic area where there is a structure with a double wall

Implementing Safety Typology- Vignette Two



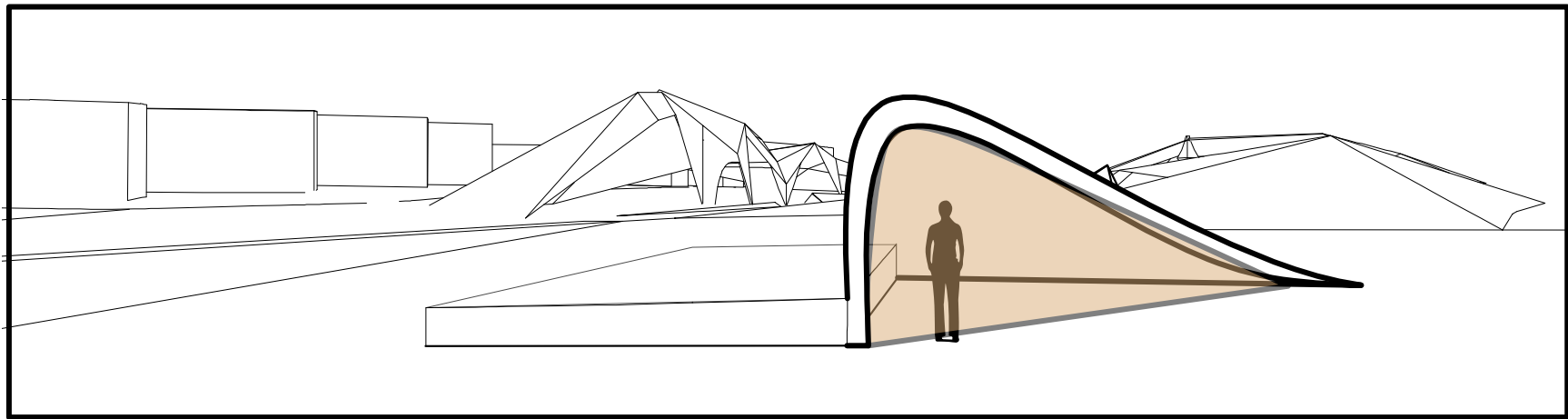
Vignette looking at a shell like shelter located in the playground

Implementing Safety Typology- Vignette Three



Vignette looking at a shell structure that acts as a roof for the outdoor amphitheater

Implementing Safety Typology- Vignette Four



Vignette looking at a concrete wave that reveals a water feature in the relaxation area



Perspective looking from the community garden towards the plaza



Perspective looking from the music building
towards the cave grass



Perspective looking from the cave grass towards the therapeutic garden

Conclusion

Design is always political, as it entails change and affects people's lives and the environment. I am aware that the topic I chose might be sensitive due to its involvement in the ongoing conflict between Israel and Palestine. I want to believe that the conflict would come to an end soon and that peace will come to this region, but for now I want to address a particular situation that has affected many peoples' lives. I think that in this particular situation design might have a role to play in relieving some of the hardship the conflict brings with it to the civilian population that is caught in the middle of this bloody conflict.

Seeing the affects conflict has on cities was very disturbing to me. Learning about the relationship between war and space and combining that knowledge with my own experience I can identify a process that happens in spaces in the city. At first the invasion of military typology into the city is very noticeable, but you welcome it with open hands as a measure of relief. After a short period of time the military infrastructure and the city identity start to blend and you do not notice the changes that happen.

Slowly a new concrete landscape emerges in the city, and people spend less and less time in public spaces and the city fabric starts denigrating. This is not a process that happens in a day, and so being the adaptable creators that we are we get used to situations and they become "normal" to us.

That was what surprised me the most during my site visit.

After a period of three years that I disengaged myself from the conflict the site visit was eye opening. The changes in the city were not only in regards to security measures, it seemed as though all aspects of life in the city were consumed by the conflict. After 15 years of active conflict the city lost its own identity and taken on the identity of the conflict. This is true not only physically but also in the psychology of spaces and how people move through space.

Taking this into consideration, I believe that landscape architecture has a role to play in cities in an ongoing armed conflict. The tools that the profession has to create different environments and re-imagine how spaces can be is something very powerful that can be utilized in both peacetimes and war. There is no doubt that this is a challenging job, as every conflict is different and brings with it its own challenges, but landscape architects carry with them a diverse set of tools and can work in many scales to adapt an environment to old and new challenges.

Next Steps

The creation of safety typology for the city is the first step that can help bring the project to its next level- implementation in a city scale. The next phase I'm imagining would be implementing this typology in the new main circulation corridor. Each and every park in the corridor could use a different typology according to the programming and users in the park. Furthermore, the pedestrian circulation route could have small niches that one can go and hide within. Due to the flexible nature of those semi-closed shelters and the ability to incorporate different programming, I hope it would help keep them safe and clean for people to use not only in time of need.

References

Arbuckle A. Q. How families lived in their WWII backyard bomb bunkers. Retrieved from <http://mashable.com/2015/07/24/wwii-backyard-bunkers/#1GG0oiNUPkqV>

Achouch, Y. & Morvan, Y. "The Kibbutz and "Development towns" in Israel: Zionist utopias: Ideals ensnared in a tormented history" [translation: Sharon Moren]), *justice spatiale | spatial justice*, n° 5 dec. 2012-dec. 2013, <http://www.jssj.org>

Amnesty International (2015) Unlawful and Deadly: Rocket and Mortar Attacks by Palestinian Armed Groups during the 2014 Gaza/Israel Conflict. Retrieved from <http://www.amnestyusa.org/research/reports/unlawful-and-deadly-rocket-and-mortar-attacks-by-palestinian-armed-groups-during-the-2014-gazaisrael>

Boyd, G. A., & Linehan, D. J. (2013). *Ordnance: War + Architecture & Space*. Ashgate Publishing, Ltd.

B'Tselem report: "Human Rights Violations during Operation Pillar of Defense, 14-21 November 2012", May 2013 - 201305_pillar_of_defense_operation_eng.pdf. (n.d.). Retrieved from http://www.btselem.org/download/201305_pillar_of_defense_operation_eng.pdf

Bunton, M., & Bunton, M. P. (2013). *The Palestinian-Israeli Conflict: A Very Short Introduction*. OUP Oxford.

Bollens S. A (2012) *City and Soul in Divided Societies*. London ; New York: Routledge.

Esveld, B. V. (2009). *Rockets from Gaza: Harm to Civilians from Palestinian Armed Groups' Rocket Attacks*. Human Rights Watch.

Evans, M. (2007). *An Institutional Framework for Policymaking: Planning and Population Dispersal in Israel*. Lexington Books.

Feldman, R., & Vengrober, A. (2011). Posttraumatic stress disorder in infants and young children exposed to war-related trauma. *Journal of the American Academy of Child and Adolescent Psychiatry*, 50(7), 645–658. <http://doi.org/10.1016/j.jaac.2011.03.00>

FEMA 453, *Safe Rooms and Shelters - Protecting People Against Terrorist Attacks (2006)* | FEMA.gov. (n.d.). Retrieved May 13, 2016, from <http://www.fema.gov/media-library/assets/documents/4498>

Gehl, J. (2011). *Life Between Buildings* (Koch J. Trans.) NW, Washington DC: Island Press.

Graham, S. (2006). Cities and the "War on Terror." *International Journal of Urban and Regional Research*, 30(2), 255–276. <http://doi.org/10.1111/j.1468-2427.2006.00665.x>

Graham, S. (2008). *Cities, War, and Terrorism: Towards an Urban Geopolitics*. John Wiley & Sons.

Graham, S. (2011). *Cities Under Siege: The New Military Urbanism*. London ; New York: Verso.

Gravett, C. (2007). *Castles and Fortifications from Around the World*. Globe Pequot.

Hadad S. (2018) Sderot: Those who can afford it have already left - Israel News, Ynetnews. Retrieved from <http://www.ynetnews.com/articles/0,7340,L-3520956,00.html>

Hirst, P. (2005). *Space and Power: Politics, War and Architecture* (1 edition). Cambridge ; Malden, MA: Polity.

Ilyés, Z. (2010). Military Activities: Warfare and Defence. In J. Szabó, L. Dávid, & D. Lóczy (Eds.), *Anthropogenic Geomorphology* (pp. 217–231). Springer Netherlands

Nuttman-Shwartz, O., & Dekel, R. (2009). Ways of coping and sense of belonging in the face of a continuous threat. *Journal of Traumatic Stress*, 22(6), 667–670. <http://doi.org/10.1002/jts.20463>

Orange, H. (2014). *Reanimating Industrial Spaces: Conducting Memory Work in Post-industrial Societies*. Left Coast Press.

Piquard, B., & Swenarton, M. (2011). Learning from architecture and conflict. *The Journal of Architecture*, 16(1), 1–13. <http://doi.org/10.1080/13602365.2011.557897>

Pubrick L. Aulich J. & Dawson G. (2007) *Contested Spaces*. Palgrave Macmillan UK

Pullan, W., & Baillie, B. (2013). *Locating Urban Conflicts: Ethnicity, Nationalism and the Everyday*. Palgrave Macmillan.

Refugees, U. N. H. C. for. (n.d.). Refworld | Report of the United Nations High Commissioner for Human Rights on the implementation of Human Rights Council resolutions S-9/1 and S-12/1, Addendum : Concerns related to adherence to international human rights and international humanitarian law in the context of the escalation between the State of Israel, the de facto authorities in Gaza and Palestinian armed groups in Gaza that occurred from 14 to 21 November 2012. Retrieved May 9, 2016, from <http://www.refworld.org/docid/513ee3aa2.html>

Schweitzer K. M (2013). Operation Cast Lead: A Perspective Through the Eyes of Sderot. *Journal of Global Justice and Public Policy*. 9(2), 146-177

SderotMedia.com: Advocate for Sderot - Facts and Information - What You Need To Know about Qassams. (2009). Retrieved from <http://www.sderotmedia.org.il/bin/content.cgi?ID=388&q=6&s=16>

Sharon A. (n.d.). Retrieved May 9, 2016, from <http://www.ariehsharon.org>

Sherman E. (2015). At Least 63% of Children in Near-Gaza Communities Suffer From Post-Traumatic Stress, Israeli Research Shows. Retrieved from <http://www.sderotmedia.org.il/bin/content.cgi?ID=1148&q=3>

Stein, N. R., Schorr, Y., Krantz, L., Dickstein, B. D., Solomon, Z., Horesh, D., & Litz, B. T. (2013). The Differential Impact of Terrorism on Two Israeli Communities. *The American Journal of Orthopsychiatry*, 83(4). <http://doi.org/10.1111/ajop.12044>

Szabó, J., Dávid, L., & Lóczy, D. (Eds.). (2010). *Anthropogenic Geomorphology*. Dordrecht: Springer Netherlands.

Trachtman D. & Bedein N. (2014) Frontline Gaza Strip: Hamas Rockets have blown up South Israel's Economy. Retrieved from <http://www.ibtimes.co.uk/frontline-gaza-how-crisis-has-decimated-israels-economy-1459715>

Troen, I. (1988). The transformation of Zionist planning policy: From rural settlements to an urban network. *Planning Perspectives*, 3(1), 3–23. <http://doi.org/10.1080/02665438808725649>

Tzfadia, E., & Yiftachel, O. (2004). Between urban and national: Political mobilization among Mizrahim in Israel's "development towns." *Cities*, 21(1), 41–55. <http://doi.org/10.1016/j.cities.2003.10.006>

Yiftachel, O. (2000). Social Control, Urban Planning and Ethno-class Relations: Mizrahi Jews in Israel's "Development Towns." *International Journal of Urban and Regional Research*, 24(2), 418–438.

Appendix

Appendix 1: Case Study- Britain WWII

Appendix 2: Materiality

- Concrete
- Earthworks

Appendix 3: Interview Questions

Appendix 4: IRB approval

Appendix 1: Case Study- Britain during World War Two

“It seems like Britain in the Second World War was a landscape of mass produced spaces. Most notably millions of Anderson air- raid shelters were erected in gardens and equipped with various comforts, making each to some extent a simulacrum of the home.” (Arbuckle, 135).

Most examples for defense architecture are provided from structures used for active defense and incorporate within them strategies for attacking or withholding military forces. These building strategies need to be reevaluated when used for passive protection of civilian population. And so, even though many decades have passed since World War Two I believe that a lot can be learned from the successes and failures of the civilian defense strategy used at those times. In many aspects the threat to the population is similar in those two cases, so exploring the different solutions that were devised during that period can act as an interesting case study for precedent work.

The emergence of air warfare and the bombing of civilian populations in the First World War threatened to bring the horrors of the trenches to the home front. And so, in the 1930s Britain prepared itself for war by mass producing safety structures both for military use and civilian use.

It was being recognized early that public shelters in open spaces, especially near streets, were urgently needed for pedestrians, drivers and passengers in passing vehicles to provide protection from air bombing. To address this issue the government commenced a program for building street com-

munal shelters. The government supplied the materials for those shelters, and was the moving force behind the scheme.

Reinforced concrete proved an ideal material for air-raid shelters, being strong and resistant to shock with no deterioration with the passing of time. Therefore most defense structure were created out of reinforced concrete and the use of earth. The larger communal shelters were built out 14-inch brick walls and 1-foot-thick (0.30 m) reinforced concrete roofs.

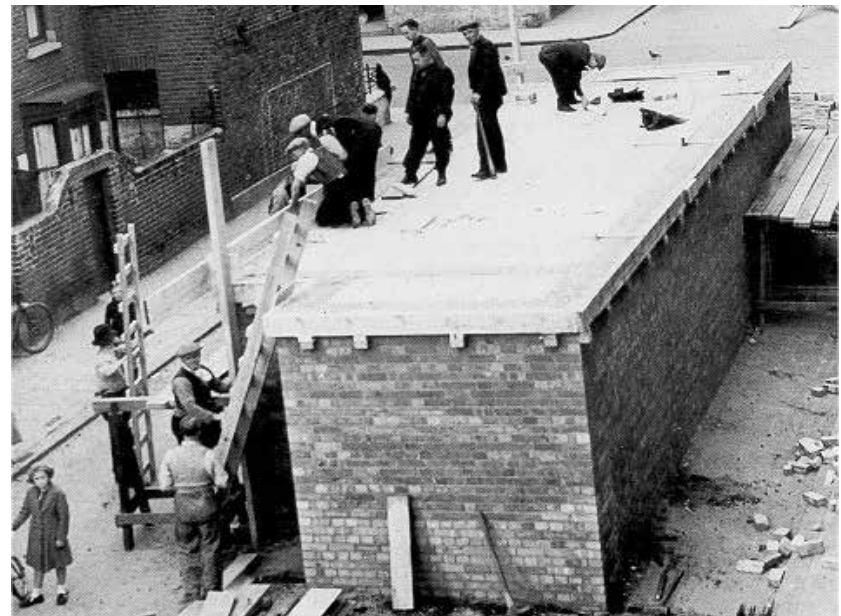
All shelters in Britain can be divided into three categories- Surface shelters, Semi-sunken shelters and sunken shelters.

Surface shelters:

Most communal shelters were surface shelters built from bricks and concrete on pavements or beside buildings. The earlier models had one or two entrances, and offered shelter from collapsing buildings and shrapnel. Some could hold several hundred people in varying levels of comfort. Other surface shelters were constructed from prefabricated reinforced-concrete units (Arbuckle)

The Civil Defence Act 1939 declared that: 'To lessen the number of casualties from a direct hit, the unit size of shelters should preferably be limited to parties of not more than 50 persons (Arbuckle).

From then on, this became the common size for surface and semi-sunken air-raid shelters in schools, businesses, and public areas.



Semi-sunken shelters:

The semi-sunken shelters used shallow initial excavation combined with earth banking to increase the strength and blast-resistance of the structure. As with surface shelters, semi-sunken shelters tended to have their entrances at an angle or behind a wall to protect the occupants from blast, while lowering the risk of being trapped behind a blocked doorway.

One of the most common semi-sunken shelters was the Anderson shelter designed for private backyards. Those shelters were designed to accommodate up to six people.

The main principle of protection was based on curved and straight galvanized corrugated steel panels. Six curved panels were bolted together at the top, so forming the main body of the shelter, three straight sheets on either side, and two more straight panels were fixed to each end, one containing the door—a total of fourteen panels. The shelters were 6 feet (1.8 m) high, 4.5 feet (1.4 m) wide, and 6.5 feet (2.0 m) long. They were buried 4 ft (1.2 m) deep in the soil

and then covered with a minimum of 15 inches (38 cm) of soil above the roof. Built out of small segments those shelters could be installed quickly and by less-skilled labor (Arbuckle).

The earth banks could be planted with vegetables and flowers, that at times could be quite an appealing sight and in this way would become the subject of competitions of the best-planted shelter among householders in the neighborhood. The internal fitting out of the shelter was left to the



owner and so there were wide variations in comfort.

Sunken shelters:

Sunken shelters often started out as basements or trenches. Those were reinforced with planks and girders at various angles so that they could withstand the collapse of the building above. Trenches were dug on open pieces of land and reinforced with sandbags, sheet metal, and wooden props. Later on, many of these trenches were built up with steel, concrete panels, or cast concrete, to create more stable and better protected shelters that could survive bombs exploding underground close by, as well as providing more comfortable accommodation.

Most school air raid shelters were typically sunken shelters. Those were mostly concrete or brick box, buried beneath soil or an existing building: a damp, stark and windowless room with minimal comforts. For frightened or board children, the claustrophobia of the shelter was deeply unpleasant environment (Arbuckle).

During the war 2.1 million shelters were erected in Britain. None of these shelters were capable of surviving a direct hit rather, they were designed to protect against the statistically far greater likelihood of a near miss.

Young people subverted or disordered these spaces with widespread and apparently spontaneous campaign of vandalism as well as by exploiting the privacy offered by the shelter for criminal and illicit sexual behavior (Arbuckle)

Although 60 years separate Britain during World War Two and Sderot in 2016 there is a surprising similarity in the built form and the uses in those two cases.

One concerning similarity between the two is the problematic nature of the closed shelters. Closed spaces give rise to maladaptive behavior and it is noticeable in Britain as well as in Israel. Taking that into consideration the need to create a semi-closed structure might be of better use for the population.

A part from the similarities there are a few differences between the two cases. Those can help when looking at new safety strategies for Sderot. First and most important is the understanding that there should be multiple typologies for providing safety according to users and uses.

The Anderson shelter is an especially interesting precedent. The use of earth and soil to cover the shelters and how civilians utilized it and were encouraged to create small gardens and other creative design ideas on top of the shelter provides an interesting creative approach for safety.

When thinking about the monolithically nature and the bare feeling of the miginiot in Israel, one might wonder of there isn't a better way to give a sensation of assimilation with the surrounding landscape by using the roofs and walls of the structure to create unique landscapes.

Appendix 2: Materiality

Earthworks:

Perhaps one of the most important means of safety used through history is earth and landforms. Examples for human landforms created for the purpose of defense are provided from all historical aspects. Defense structures (earthworks, defense walls, medieval ramparts and fortresses), landscape transformations during World Wars I and II as well as the geomorphic impacts of modern wars and nuclear Tests (Ilye's,2010).

Most earth works are based on strategic concepts of war conduct, reflecting the specific protective needs combined with contemporary technical standards. Meaning, with the advancement of war technology and structural materiality the function and use of earth as a defense measure changed.

In the medieval times earth was mostly used for filled drag structures and those were mostly supported by stone or brick work. In the 20th century this changed and earth was mostly supported by reinforced concrete, those concrete structures are covered with earth works on the top and sides to create their final (Ilye's,2010). This change can be attributed to the incorporation of concrete as a widely used material and also to the change in the way wars are fought.

In that sense WWI marks a great shift in war fare. The advanced fire-power, military technique innovations and positional warfare at many fronts caused not only drastic changes

in military formation but is created an extraordinary military landscape transformations. World War I trenches and the various automatic rifle and machine gun posts established at battlefields and defense lines are remarkable monuments of human landscape transformation. (Ilye's,2010)

Following World War I, defense lines, concrete-cored fortification and bunker systems (e.g. Maginot Line, West wall or Siegfried Line) were constructed to counteract large-scale attacks and invasions across Europe. Further examples the Atlantic wall and Ostwall. Earth was used in those cases not so much as a mean for fortification but as a layer of camouflage of the massive concrete bunkers.

Concrete

The use of earth and concrete complement each other very well when combined together in defense structure. Earth helps give the bare concrete a softer feeling and adjustable forms as well as provide another layer of safety. But as the reinforced concrete is the primary layer of defense it is important to investigate what are the regulations when building defensible structures.

Historically, cast-in-place reinforced concrete was the preferred material for explosion-mitigating construction. This is the material used for military bunkers, and the military has performed extensive research and testing of its performance. Among its benefits, reinforced concrete has significant mass, which improves its inertial resistance; it can be readily proportioned for ductile behavior and may be detailed to achieve continuity between members.

Reinforced concrete is still a preferred measurement when building for defense. The Federal emergency management agency (FEMA, 2006) issued a guidelines for building shelters and safe rooms detailing some basic measurements that need to be taken under consideration when building. In order to provide the required level of resistance, the walls must be constructed using the appropriate thickness of ballistic-resistant materials, such as reinforced concrete, masonry, mild steel plate, or composite materials.

Reinforced concrete is a composite material in which the concrete provides the primary resistance to compression and shear and the steel reinforcement provides the resistance to

tension and confines the concrete core.

The required thickness of these materials depends on the level of ballistic resistance; however, resistance to a high level of ballistic threat may be achieved using 6.5 inches of reinforced concrete, 8 inches of grouted concrete masonry unit (CMU) or brick, 1 inch mild steel plate, or $\frac{3}{4}$ inch armor steel plate. (FEMA, 2006)

Those specifications would be included in the final design of the safety shelters in public space.

Appendix 3: Interview Questions

Semi-standardized interview for citizens:

For my interview I am going to use a semi-standardized interview. Using a few predetermined questions and apical topics. The questions would be asked in a systematically and consistent order, but the interviewers are allowed freedom to digress.

1. Demographics

- Where were you born?
- For how long have you lived in the city?
- How many generations lived in the city before you?
- What is your family's origin?
- What is your profession?
- Do you work in the city?
- Where does your family live?
- Do you have children's younger than 18? If younger than 18 where do they go to school?
- What neighborhood are you from?
- Did you move within the city?

2. City related questions

- Where do you spend most of your time in the city?
- Where do you go to do your grocery shopping?
- Do you use public transportation?
- Are there areas in the city that you find particularly successful?

- Have you noticed a difference in population since the new train station opened?
- Do students from the nearby collage leave in the city? Where do they usually live?
- What are the most successful neighborhoods in the city?
- Are there specific areas that you think need to be improved? If yes, do you have any recommendations?

3. The city since the conflict started:

- When was the first time you had to go to shelter?
- What were some of the hardest times since the conflict began?
- Did you ever leave the city for a while?
- What in your opinion is the most dramatic effect the conflict had on the city?
- Do you know any people that left the city?
- Can you say why they left? Why did you stay?
- What is the change in demographics in the city since the conflict began?
- How does the conflict affect your life?
- Give an example to how you react when a "tzeva adom" sounds.
- Do you think the "migoniot" typology is successful?
- What are the most urgent issue regarding safety?

4. Questions about public space:

- Do you have parks in the city?
- Do people usually use them?
- Do you have other places that are open to the public?
- Which ones are successful?
- Do you use public spaces?
- What do you usually do in them?
- What do you prefer doing in your spare time?
- Do you find the new shopping centers successful?
- Is the market in the city still active?
- What do children's do after school?
- Do they spend much time outside?
- Is there a get together place for adults in the city?
- Would you like to see more open spaces in the city?
- Where do you think would be the most successful place to create a new public space?

5. Future plans for the city:

- Do you foresee an end for the conflict? If yes, how would you think the city would change?
- Is there a city you find particularly inspiring?
- What changes would you like to see in the city?