

From Adaptability to Mobility:
Spaces for Learning in the War Zones of The Syrian Arab Republic

By:

S. Ghazal Dehghany

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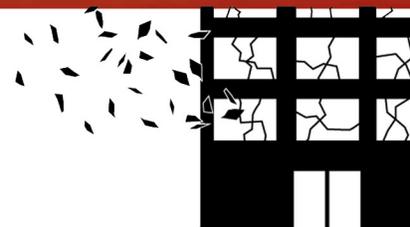
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MOBILE SPACES FOR LEARNING



ABSTRACT

This Thesis is a response to the humanitarian crisis and the displacement of more than 11 million people in the Syrian Arab Republic. It is mainly focused on the city of Aleppo and some of its young civilians, children in school aged 6-12 years old, as they experience an ongoing brutal and radical transformation due to the Syrian Civil War, which is now entering its sixth year and is currently in a ceasefire stage.¹ As a result of this merciless war, a whole generation in Syria has lost their right to education for more than five years now.² When a government fails to protect its own people, perhaps a call to action rests on the shoulder of the wider global community to find solutions and help rebuild a war torn country.

In order to propose an architectural design strategy that could be both effective and thoughtful, this research first aims to understand the scope and elements of the Syrian crisis. Next, it aims to contribute to what can only be resolved by a greater effort on multiple fronts. The purpose of this thesis is to draw attention to the crisis in the educational system, which is the corner stone of rehabilitation and the progress that is needed in rebuilding a torn republic. The final aim is to propose ideas that support the immediate return of the Syrian children back to school without fear. Most functioning schools in Syria suffer from the lack of students showing up for classes; parents consider schools too exposed to potential military targets and are often in a position to prevent children from attending.

I strongly believe that establishing and designing places for learning, which include but are not limited to building schools after the end of conflict of Syria, will give a new generation hope for a better future. It will also teach them the skills they need to contribute to the rebirth of their country. This thesis contributes to understanding the immediate and transitory steps in this re-building process, which is essential to the construction of an intermediate place for learning before real and permanent school construction begins. A mobile learning space can bring education back to students and help prevent the schools' destruction as collateral damage. With its locality being mobile, it can have unrestricted points of arrival, departure, and anchorage. It will also feature multi-functional surfaces, a recognizable exterior, and modular elements like seats and shelves, and can facilitate holding classes in a chosen safe stationary location, or be on the move when needed, in order to seek a better location; lastly it can serve to commute the children to and from their communities.

¹ Walker, S., & Shaheen, K. (2016, December 30). Syria ceasefire appears to hold after rivals sign Russia-backed deal. Retrieved March 05, 2017, from <https://www.theguardian.com/world/2016/dec/29/syrian-government-and-rebels-have-signed-ceasefire-agreement-says-putin>

² Brown, G. (2016, January 12). Without education, Syria's children will be a lost generation | Gordon Brown. Retrieved March 05, 2017, from <https://www.theguardian.com/commentisfree/2016/jan/12/syria-refugee->

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Also, I would like to offer special thanks to my committee chair, Professor Ozar Saloojee, for his offered guidance, and support. I also want to thank Professor Greg Andonian and Lois Frankel for serving on my graduate committee.

I would like to thank my amazing Father, Dr. Naser Dehghani, and dearest Mother, Mitra Ghabeljou, for each providing me with love, encouragement and support. Special thanks go to my amazing Brother, Dr. Danyal Dehghani, who has provided me with endless care, and guidance. I would also like to thank my dearest Nima S. Fathi for always encouraging me to pursue my dreams. To them, I dedicate this thesis.

Ghazal Dehghany
August, 2017.





"We were scared, but our fear was not as strong as our courage."

Malala Yousafzai

LIST OF FIGURES

Note: All figures not listed are properties of the author.

Figure 1: <http://www.independent.co.uk/>

Figure 2: <https://www.mercycorps.org/>

Figure 3: <http://www.unhcr.org/>

Figure 4: <https://news.vice.com/article/the-battle-for-syrias-aleppo-just-went-through-a-chaotic-48-hours> - <http://www.thealeppoproject.com/>

Figure 5: <http://syriadirect.org/news/the-ruin-of-syria%E2%80%99s-schools-mapping-damaged-and-destroyed-schools-in-syria/>

Figure 6: The Assistance Coordination Unit Thematic Report Feb. 2016

Figure 7: <http://www.businessinsider.com/r-i-study-in-a-cave-going-to-school-in-syria-2016-6>

Figure 8: <http://www.businessinsider.com/r-i-study-in-a-cave-going-to-school-in-syria-2016-6>

Figure 9: <https://thepeoplescanopy.wordpress.com/>

Figure 10: <https://thepeoplescanopy.wordpress.com/>

Figure 11: <https://thepeoplescanopy.wordpress.com/>

Figure 12: <https://thepeoplescanopy.wordpress.com/>

Figure 13: <http://csinclair.readyhosting.com/images/mini.pdf>

Figure 14: <http://csinclair.readyhosting.com/images/mini.pdf>

Figure 15: <https://www.tumbleweedhouses.com/expert-advice-how-to-resources/trailer-101/>

Figure 16: <https://www.disabled-world.com/artman/publish/height-weight-teens.shtml>

Figure 17: Schools in Syria Thematic Report (Rep.). (2016). The Assistance Coordination Unit. Retrieved July 5, 2017.

Figure 18: Schools in Syria Thematic Report (Rep.). (2016). The Assistance Coordination Unit. Retrieved July 5, 2017.

Figure 19: Schools in Syria Thematic Report (Rep.). (2016). The Assistance Coordination Unit. Retrieved July 5, 2017.

Figure 20: Schools in Syria Thematic Report (Rep.). (2016). The Assistance Coordination Unit. Retrieved July 5, 2017.

Figure 21: Schools in Syria Thematic Report (Rep.). (2016). The Assistance Coordination Unit. Retrieved July 5, 2017.

Figure 22: https://www.ted.com/talks/michael_murphy_architecture_that_s_built_to_heal

Figure 23: <http://www.cnn.com/2016/09/14/architecture/homs-syria-architect-marwa-al-sabouni/index.html>

Figure 24: http://photography.jadaliyya.com/pages/index/23344/the-art-of-healing_syrian-refugee-children-express



CONTENTS

ABSTRACT
ACKNOWLEDGMENT
LIST OF FIGURES

INTRODUCTION

Architecture and Violence
Syrian Crisis

1

SITUATING THE PROJECT

Syria: Timeline
City of Aleppo
Attacks on Schools

2

SYRIAN EDUCATIONAL SYSTEM

Syrian Schools Prior to the Conflict
Syrian Education Today

3

MOBILE ARCHITECTURE | PRECEDENT STUDIES

Flexible Architecture
People's Canopy
Mobile Health Clinic to Combat HIV/AIDS

4

DESIGN PROPOSAL

Need and Impact
Narrative, Programming and Assembly

CONCLUSION

BIBLIOGRAPHY

APPENDIX

INTRODUCTION

“To encourage peace, to make sure children are safe and not fodder for extremists, to slow the flow of refugees to Europe, and to prevent the emergence of a permanently scarred lost generation of young people, we must offer a grand vision equal to the challenge.”¹

-Gordon Brown-

¹ Brown, G. (2016, January 12). Without education, Syria's children will be a lost generation. Retrieved March 05, 2017, from <https://www.theguardian.com/commentisfree/2016/jan/12/syria-refugee-children-lebanon-double-shift-schools>

- Architecture and Violence

Architecture reveals the conflicts it witnesses.¹ Buildings document violence in all their various shapes, whether carried directly on them or around them.² Facades are storytellers of a long and perhaps lost history. The gaping holes instead of doors and the bullet cuts as windows tell an excruciating story of suffering and the need for endurance.³ Nevertheless, despite the fact that destruction severely injures architecture, and turns it into an instrument of violence against its inhabitants, it does not declare its death.⁴

The destruction of a built environment manifests itself as a physical exhibition, showcasing violence and its damaging ramifications. When architecture and violence meet, the destruction of buildings also means the killing of people. The hidden trail of war crimes and human sufferings are embedded in the destruction of the built environment.⁵ But who inflicted violence? What gets destroyed when violence occurs? The order of destruction by militaries often appears as an act of self-defense. By destroying significant architecture, the attacker imposes severe changes on social, political, or spiritual life that was once sustained within it.⁶

The physical destruction that exists after any disaster, initiates an urgency to rebuild wounded communities and help survivors recover. There are many inspiring examples that promote the power of architects and planners in their contribution towards rebuilding damaged societies. In some cases, their efforts have facilitated the needs of the destroyed communities and have given them hope that things will get better. However, in other cases, planners have overwhelmed communities with irrelevant replacements and opportunities to the survivors needs and values. Often, most disasters are beyond the capacities of local powers to deal with and require outside help. This outside help, however, comes with its own characteristics; the care and the commitment of the contributors often gets formed in a different social setting, and therefore, their understanding of what “rebuild” means may differ from the views of the survivors. An example that demonstrates this polarity is the bushfire in Marysville and Kinglake in Victoria Australia, in 2009.

1 Weizman, E. (2016, May 4). The walls have eyes: Buildings reveal the conflict they witness [Interview by C. Wilson]. Retrieved February 4, 2017, from <https://www.newscientist.com/article/mg23030720-400-the-walls-have-eyes-buildings-reveal-the-conflict-they-witness/>

2 Kenzari, B. (2011). Architecture and violence. Barcelona: Actar.

3 Ghazal, J. (2016). Architecture and Violence: Between Representation and Exchange (Master's thesis, Carleton University, 2016). Ottawa: Carleton. Retrieved February 4, 2017.

4 Ibid.

5 Ibid

6 Ibid.

After the bushfire, Bamford Dash Architects started reconstructing the Advisory Centre. The building was built according to high standards and with a considerable amount of time and effort, winning several awards. However, the contrast between this new, well thought-out building with the empty landscape that surrounded it placed emphasis on the community's massive loss and was considered insensitive.¹

As a result of natural hazards and conflicts, the issue of the destruction of the built environment is a growing concern throughout the architectural industry. For architecture to be used as an intelligent process of response and for projects to effectively resonate with communities, a series of means and measures need to be considered.² Defining priorities for reconstruction becomes the most significant political debate for any country after a major disaster.³ Whether from war, natural disaster, or industrial calamity, societies will face similar concerns and questions; what has priority? What is more urgent? What needs to be built first, before other things? Depending on the scope and the nature of the disaster, and the people that are affected, strategies towards rebuilding a community may vary. From temporary housing projects and refugee camps to mobile clinics and makeshift schools, the art of space making by architects comes into play to offer the most creative and satisfying proposal to meet the necessary needs. Some of these examples will be introduced and discussed in details later in this document.

This design thesis is intended to work as a response to the recent crisis in Syria. By understanding destruction as a demonstration of violence both against architecture and most importantly, against those who inhabit architecture, it intends to identify and analyze the factors that contribute to the healing process of victims of human brutality, war crimes, and conflicts through architectural manifestations.

1 Donovan, J. (2013). *Designing to heal: planning and urban design response to disaster and conflict*. Collingwood, Vic.: CSIRO Publishing. Introduction.

2 Reinders, K. J. (2014). *Rebuilding after Disaster: Towards a Resilient Community* (Master's thesis, Carleton University, 2014). Ottawa: Carleton. Retrieved February 4, 2017.

3 Amirahmadi. (n.d.). *Recovery from war*. Retrieved February 10, 2017, from <http://archive.unu.edu/unupress/unupbooks/uu211e/uu211e0f.htm>

- Syrian Crisis

Over half of the population of Syria has been forced to leave their homes due to the civil war in the Syrian Arab Republic, which started in 2011. Some have been displaced many times. Approximately five millions Syrians have fled to Turkey, Lebanon, Jordan, Egypt, and Iraq.¹ Almost 50% of Syria's major cities, including 290 heritage sites, have been either damaged or destroyed, and at least 12,000,000 homes, 1,549 places of worship and 4,000 schools have been demolished.² These massive numbers represent the enormous scale of destruction and the extent of the humanitarian crisis, making the Syrian conflict the largest humanitarian and refugee crisis since World War II.³ In the city of Homs, Syria's third largest city, every horizon shows rubble from shattered buildings by deadly bombings.⁴ In a CNN interview Marwa al-Sabouni, a young architect currently living in the city of Homs, talks about her family's everyday life challenges in the war zone, from mundane routines to life threatening experiences. She believes that through architecture people can regain strength and hope; that they can recover more easily if they believe that their ruined homes and cities will be rebuilt and life will return to normal. She holds this belief very close to her heart and expands on it in her visionary sketch book called: "The Battle for Home: The Vision of a Young Architect in Syria." She believes, just as I do, that reconstruction and long-term recovery plans should come from within Syria. The people of Syria must be heard as the main voice in the decision making processes that rebuilds their country. For this reason, this thesis is to be understood as an offering, which is meant to draw attention rather than offer ready-made solutions. A final design could only be planned in direct consultations with the communities of Syria in conjunction with some of the international bodies which have been sustaining people in various ways throughout this period of struggle. As for the wider world, communities and professionals such as architects should contribute to more immediate plans of action by showing their support towards this wounded community. Naturally, this contribution could lead to more permanent solutions.

1 The Syrian refugee crisis and its repercussions for the EU. (2016, September). Retrieved February 02, 2017, from <http://syrianrefugees.eu/>

2 Riafi, D. A., & Haddad, M. (2015, March 17). What's left of Syria? Retrieved March 22, 2017, from <http://www.aljazeera.com/in-depth/interactive/2015/03/left-syria-150317133753354.html>

3 About the Crisis. (n.d.). Retrieved February 04, 2017, from <http://www.unocha.org/syrian-arab-republic/syria-country-profile/about-crisis>

4 Pfeifer, H. (2016, November 18). The vision of a young architect in Syria. Retrieved July 05, 2017, from <http://www.cnn.com/2016/09/14/architecture/homs-syria-architect-marwa-al-sabouni/index.html>

Among the approximately five million Syrian people who have fled to neighbouring countries, one-third are children and youth.¹ The number of children in need of humanitarian assistance keeps increasing. The UN estimates that due to shifting front lines, capacity limitations and security, up to two million children are currently denied access to life-saving necessities.² Education, in particular, is one of the major areas that was hit hard by the Syrian crisis. The latest reports reveal that almost 4000 schools have been destroyed due to the Civil war.³ Before the War, Syria had a strong education system with near universal primary school enrollment and 70% of children attending secondary school. However, the Civil War has placed an entire generation of children at risk of being lost to a cycle of violence.⁴

A single attack on a school can keep hundreds of children out of classrooms. In today's Syria, the sounds of shelling and shootings within school grounds are becoming almost normal in many cities, forcing closures and displacements, and reversing children's right to education.⁵ Article 13 of the International Covenant on Economic, Social, and Cultural Rights clearly states that education is a fundamental human right. It is an empowering right that acts as a primary vehicle by which economically and socially, adults and children can lift themselves out of poverty and obtain the means to participate fully in their communities.⁶

Syrians deserve to be the recipients of intelligent and sensitive projects that enable them to see beyond horror and conflict and reclaim a measure of hope. The aim of this thesis is to design a mobile learning space for the younger generation of Aleppo, a city in the northern part of Syria. My hope is that education can become a tool that helps rebuild one of the oldest continuously inhabited cities in the world,⁷ which is now ruined. With architecture and the act of building, even the smallest gestures can help in giving people hope. Thus, finding the appropriate scale in which to start an immediate response to this massive destruction is the key point in this thesis proposal.

1 Syria Crisis Response | United Nations Educational, Scientific and Cultural Organization. (n.d.). Retrieved February 10, 2017, from <http://www.unesco.org/new/en/syria-crisis-response/>

2 Schools under Attack in Syria (Rep.). (n.d.). Southern Turkey Education Cluster. Retrieved February 10, 2017, from http://reliefweb.int/sites/reliefweb.int/files/resources/FINAL-Education-Under-Attack_STurkey-Briefing-Paper_2015-09-03.pdf

3 Riafi, D. A., & Haddad, M. (2015, March 17). What's left of Syria? Retrieved March 22, 2017, from <http://www.aljazeera.com/in-depth/interactive/2015/03/left-syria-150317133753354.html>

4 Schools under Attack in Syria (Rep.). (n.d.). Southern Turkey Education Cluster. Retrieved February 10, 2017, from http://reliefweb.int/sites/reliefweb.int/files/resources/FINAL-Education-Under-Attack_STurkey-Briefing-Paper_2015-09-03.pdf

5 Ibid.

6 United Nations. (1988). The right to education (Art.13) (Economic and Social Council). Retrieved July 5, 2017, from https://www.nichibenren.or.jp/library/ja/kokusai/humanrights_library/treaty/data/CESCR_GC_13e.pdf

7 BBC News. (2016, November 28). Profile: Aleppo, Syria's second city. Retrieved February 4, 2017, from <http://www.bbc.com/news/world-middle-east-18957096>

*“Good Architecture can give us hope.”*¹
Michael Murphy

¹ Murphy, M. (2016). Motion picture. TEDtalk . Retrieved July 12, 2017, from <https://www.youtube.com/watch?v=MvXZzKZ3JYQ>

1

- Syria: Timeline

Syria today constitutes only a portion of the ancient geographical Syrian landmass, a region situated at the eastern end of the Mediterranean Sea. In the post-Ottoman era of the early twentieth century, the Western powers created the contemporary states of Syria, Lebanon, Jordan, and Israel in this region. Throughout history, Greater Syria has been the focal point of a continual conversation between the Middle East and the West. Syria has been home to many powerful empires since approximately 2000 B.C. The discovery of an ancient site near Aleppo in the 1970s is one of the many sources of evidence for a sophisticated and powerful empire. Early Syrian history features influential powers such as Aramaeans, Greek, Roman, and Byzantine Empires.¹

Up until the seventh century Syria remained under control of the Christian authorities. Muslim Arabs took over Syria in 635 A.D. and Damascus became the Capital of Islamic Umayyad Empire. Between the years of 661 and 750, most Syrians became Muslim and the official language changed from Aramaic to Arabic. Islamic dominance over Christianity in Syria provoked the first major Western foreign endeavours in the Middle East. Syria attracted European traders and with that Western science and technology.²

In the Period of French Mandate, the region was divided and Muslims rose up against the French, politically and in defense of their civil rights. Despite French opposition, the former Soviet Union, along with the United States and Great Britain, granted Syria recognition as an independent state in 1944. However, it wasn't until 1946 and by order of the United Nations that French troops left Syrian soil.³

Although Syria has been an independent state since 1944, it has been subjected to many different powers and authorities. Under a popular referendum in 1971, Hafez Al- Assad became the president of Syria and provided the country with thirty years of stability and unity. In 2000, with the death of Hafiz Al Assad, his son, Bashar Al Assad, became the new president and focused on political and economic reforms.⁴

1 Tharoor, I. (2012, July 27). Brief History of Aleppo: A Great World City Now in the Grip of War | TIME.com. Retrieved February 02, 2017, from <http://world.time.com/2012/07/27/brief-history-of-aleppo-a-great-world-city-now-in-the-grip-of-war/>

2 Kästle, K. (n.d.). History of Syria. Retrieved July 05, 2017, from <http://www.nationsonline.org/oneworld/History/Syria-history.htm>

3 Ibid.

4 Ibid.

In early 2011, a series of peaceful protests erupted in Syria following the Arab Spring democratic uprising, which originated in Tunisia. However, when in March 2011, twelve schoolboys were detained and tortured for having written graffiti in support of the Arab Spring and a thirteen year-old boy was killed after being brutally tortured, what should have been a peaceful revolt, suddenly spiralled Syrians down a path towards Civil War. Following these tragedies, the Syrian government, led by President Bashar al-Assad, responded to the protests by killing hundreds of demonstrators. Eventually, in July 2011, a Free Syrian Army formed, in hopes of overthrowing the government.¹

¹ Al Jazeera . (2016, December 14). Syria's Civil War Explained [Press release]. Retrieved February 5, 2017, from <http://www.aljazeera.com/news/2016/05/syria-civil-war-explained-160505084119966.htm>



Six years since teenage graffiti sparks Syrian civil war...

ARAB SPRING 2011,...

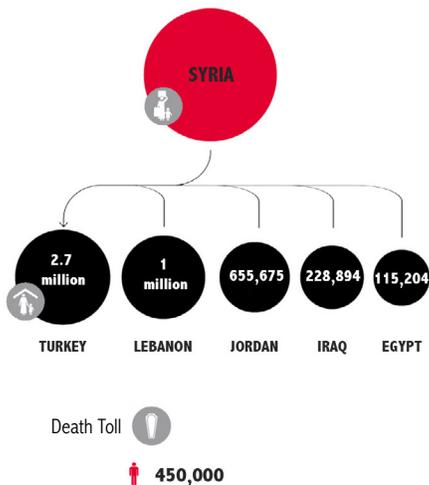
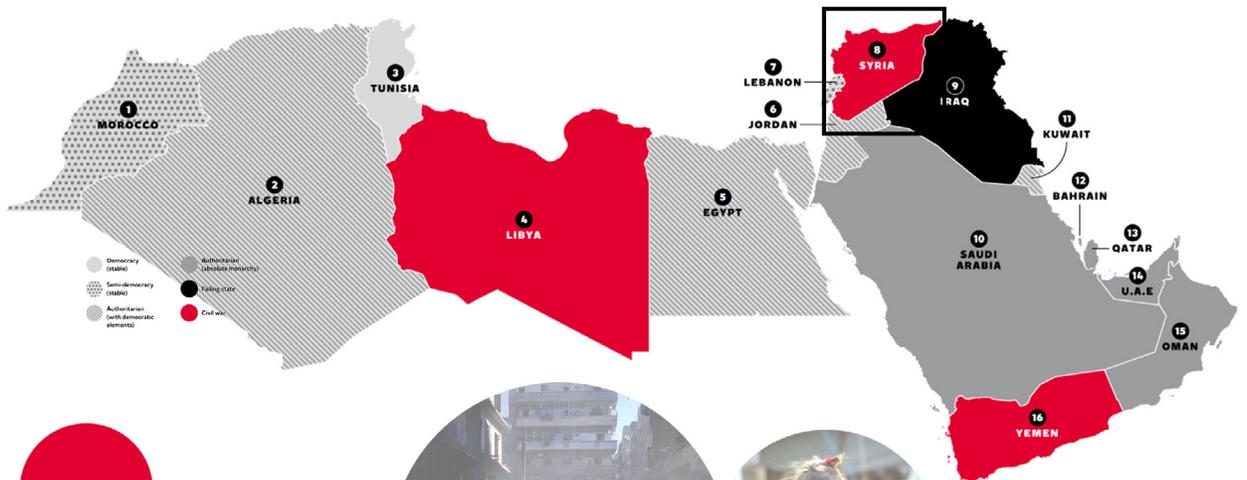
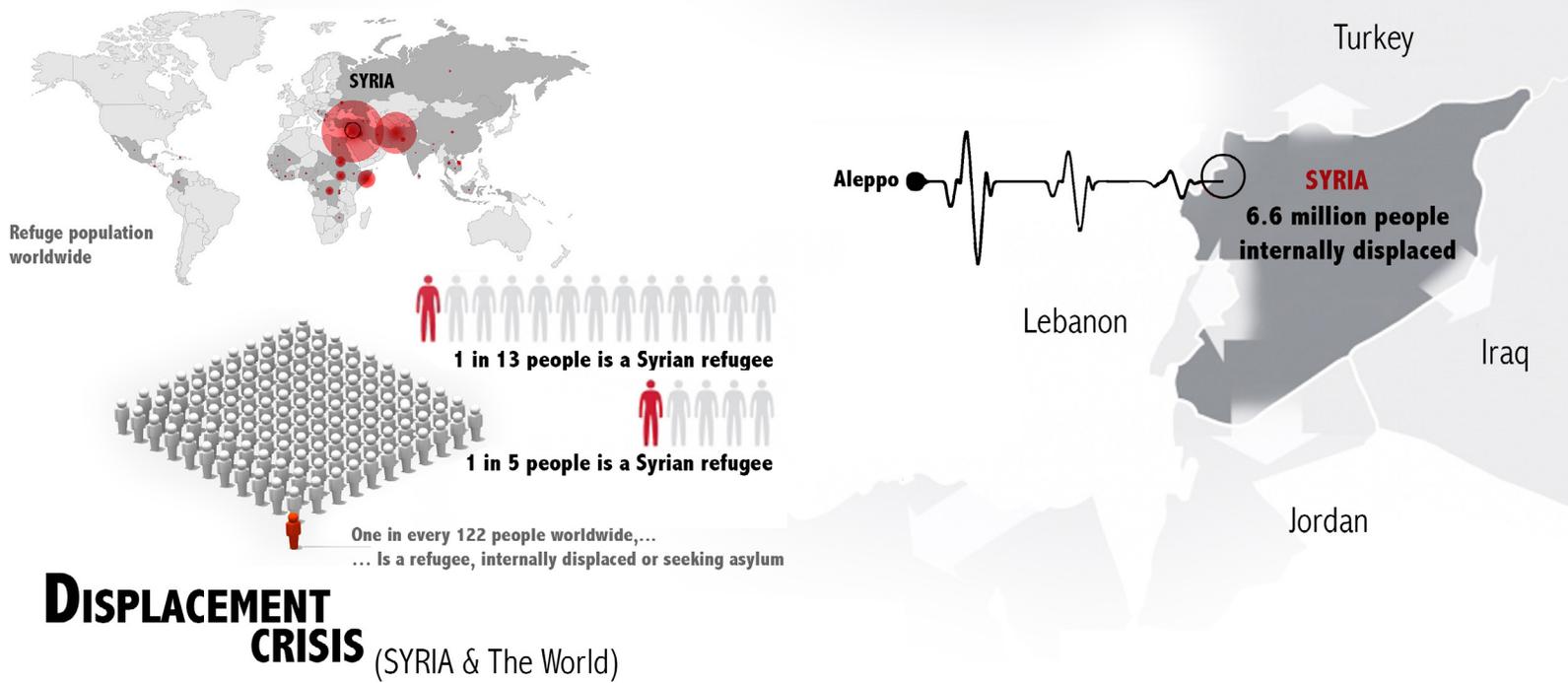


Figure 1: Arab Spring - Data from "The Independent Online"



6+ Millions Displaced Internally

+

5+ Millions Fled to Neighbouring Countries

Estimated percentage growth in IDPs Within Syria
Aleppo had a growing number of IDPs between 2011 to 2014

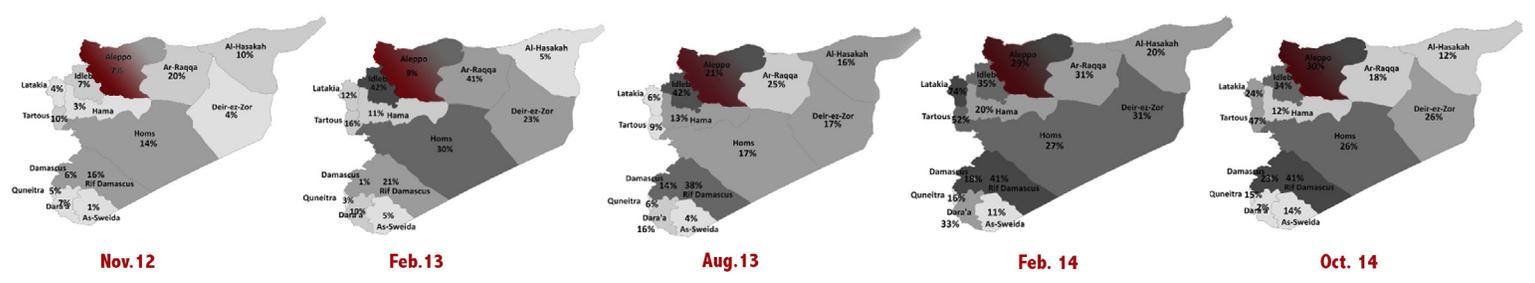


Figure 2: Displacement Crisis
Data from "UNHCR"

Since the beginning of the conflict in Syria in 2011, more than 450,000 Syrians have been killed and about twelve other million people, equal to half of the existing population, have been displaced.¹ Many of the displaced population, including children and youth, are currently living in collective shelters, refugee camps, or makeshift settlements. Over four million Syrians have fled to Turkey, Lebanon, Jordan, Egypt, and Iraq.² According to the United Nations, life expectancy has dropped two decades, down to 55 years. An estimated of 80 percent of the country is now living in poverty due to the severe economic crash caused by five years of war. In addition, half of all school-aged children haven't attended school in almost four years. Even the electricity supply is now cut. Syria has literally gone dark.³

¹ Ibid
² The Syrian refugee crisis and its repercussions for the EU. (2016, September). Retrieved February 02, 2017, from <http://syrianrefugees.eu/>
³ Beck, J. (2015, March 16). Syria After Four Years: Timeline of a Conflict. Retrieved March 05, 2017, from <https://news.vice.com/article/syria-after-four-years-timeline-of-a-conflict>

In January 2012, The Arab League called for Assad to step down due to the increasing violence. In February 2012, The UNSC also drafted a resolution in support of the Arab League and called for Assad's resignation. However, Russia and China, Assad's longtime allies, vetoed this attempt towards peaceful resolution.¹ Following their first attempt, in July 2012, The UNSC drafted a sanction plan against the Syrian government and yet again, Russia and China vetoed it. Days later, Assad said that he would use chemical and biological weapons if Syria was attacked by a foreign power. Barak Obama, the United States president at the time, stated that America may respond militarily to Assad's crossing of the "Red Line", and that it would supply the rebels with \$45 million worth of non-lethal aid.

¹ Ibid.

Education was hit hard in Syria throughout five years of continued conflict. Estimates indicate that 2.1 to 2.6 million children are currently out of school and an additional one million is at risk of dropping out. Additionally, one quarter of Syrian schools, approximately 4200, have been damaged, destroyed, or used as shelters or for purposes other than education.¹ Reports state that in 2014, Syria had the second worst enrollment rate in the world.² Between January and December 2014 alone, UNICEF has recorded 80 attacks on schools. At least 160 children were killed and 343 injured during these attacks. The lack of safe and protective learning spaces, shortage of teachers and textbooks, coupled with the lack of sanitation and hygiene facilities, have all become obstacles to children's' right to access education.³

¹ Schools under Attack in Syria (Rep.). (n.d.). Southern Turkey Education Cluster. Retrieved February 10, 2017, from http://reliefweb.int/sites/reliefweb.int/files/resources/FINAL-Education-Under-Attack_STurkey-Briefing-Paper_2015-09-03.pdf
² No Lost Generation. (n.d.). Retrieved March 05, 2017, from <http://nolostgeneration.org/>
³ Schools under Attack in Syria (Rep.). (n.d.). Southern Turkey Education Cluster. Retrieved February 10, 2017, from http://reliefweb.int/sites/reliefweb.int/files/resources/FINAL-Education-Under-Attack_STurkey-Briefing-Paper_2015-09-03.pdf

4,320,000 SYRIANS NEED EDUCATION NOW



5-17 YEARS OLD OUT OF SCHOOL
INSIDE SYRIA



SYRIANS IN THE REGION



18-24 YEARS OLD OUT OF SCHOOL
INSIDE SYRIA



SYRIANS IN THE REGION



Figure 3: Education Crisis - Data from "UNHCR"

- City of Aleppo

Aleppo was the largest city in the Syrian Arab Republic prior to the conflict. It is located in the northern part of the Syria, with the population of over 2 million and an overall area of 70 square miles.¹ With a history as ancient as that of the city of Damascus, the city is no stranger to wars, epic earthquakes, and a succession of empires and battles. With its thousand years old limestone houses and winding old streets, this UNESCO World Heritage site is a testament of cultural richness and resilient people,² or at least it was, prior to the conflict.

Following the advent of Islam and into the medieval era, Aleppo became a hub on the Silk Road, connecting trade between the East and the West. It was a place where many people grew wealthy. By the 16th century, many European merchants started setting up shops in the city.³ Well into the 20th century, the city remained home to a diverse mix of faiths and denominations. However, it always had a prominent and thriving Jewish community. One of the most famous copies of the Hebrew Bible, now known as the Aleppo Codex, was under the protection of the Aleppo community for six centuries. Aleppo's layered past and sophisticated identity is quite evident in its architecture, even under the fire of this brutal war. The Umayyad Mosque of Aleppo (The Great Mosque) and the Citadel on a hilltop at the heart of Aleppo with their significant early Roman and Byzantine structures are great examples of profound craftsmanship.⁴ Sadly, the 11th-century minaret of Umayyad Mosque was destroyed in an air strike on April 24, 2013.⁵ A professor of archaeology at the American University of Beirut has stated that:

*“This is like blowing up Taj Mahal or destroying the Acropolis in Athens. This mosque in a living sanctuary.”*⁶

Aleppo today is mostly ruined, its dazzling structures and delightful architectures are severely damaged. Lina Sergie Attar is a writer and architect who grew up in Aleppo. She now lives in Chicago where she helps run the Karam Foundation, a non-profit that provides education to people in need in the United States and the Middle East.⁷

1 Syria. (1955). Damascus: Directorate-general of information.

2 Tharoor, I. (2012, July 27). Brief History of Aleppo: A Great World City Now in the Grip of War | TIME.com. Retrieved February 02, 2017, from <http://world.time.com/2012/07/27/brief-history-of-aleppo-a-great-world-city-now-in-the-grip-of-war/>

3 Ibid.

4 Ibid.

5 Watson, L. (2013, April 25). 'This is like blowing up the Taj Mahal': Fierce fighting reduces iconic 11th-century minaret at Syria mosque to rubble. Retrieved March 22, 2017, from <http://www.dailymail.co.uk/news/article-2314459/Umayyad-Mosque-Archaeologists-left-horrified-historic-11th-century-minaret-reduced-rubble.html>

6 Ibid. A professor of archaeology at the American University of Beirut

7 Attar, L. S. (2016, December 15). [Interview by C. Woolf]. Retrieved February 6, 2017, from <https://www.pri.org/stories/2016-12-15/whats-been-lost-aleppos-magical-old-city>

In her interview with the Public Radio International, she talks about her childhood memories of the city of Aleppo:

*“Aleppo is really a magical place. It is a place where you can literally feel history while you’re walking down the old streets. You can see the layers of history and so many civilizations, and it expresses the diversity of Aleppo’s history. So, you can see a mosque and a church and a synagogue on one old street. You can see the bazaars, they’re very labyrinthian, very magical. I mean they take you back to a different time when commerce actually began, as Aleppo was on the Silk Road. You can see where the caravans used to come, carrying goods, and you see the people who are actually in these shops and doing this kind of trade, have inherited that from their fathers and their grandfathers and great-grandfathers. So, you see that kind of continuation of history through the people themselves.”*¹

Up until recently, Aleppo wasn’t one of the major Syrian cities under attack. However, when Aleppo’s protesters were killed by Assad’s forces in February 2012, rebel groups took over the Eastern part of the city, leaving the Western part under the control of Assad’s forces. The city was divided and the conflict intensified. Nonetheless, following the ceasefire of December 2016, the Syrian government, with the help of Russian authorities, gained control over most of the Eastern part of Aleppo as well.²

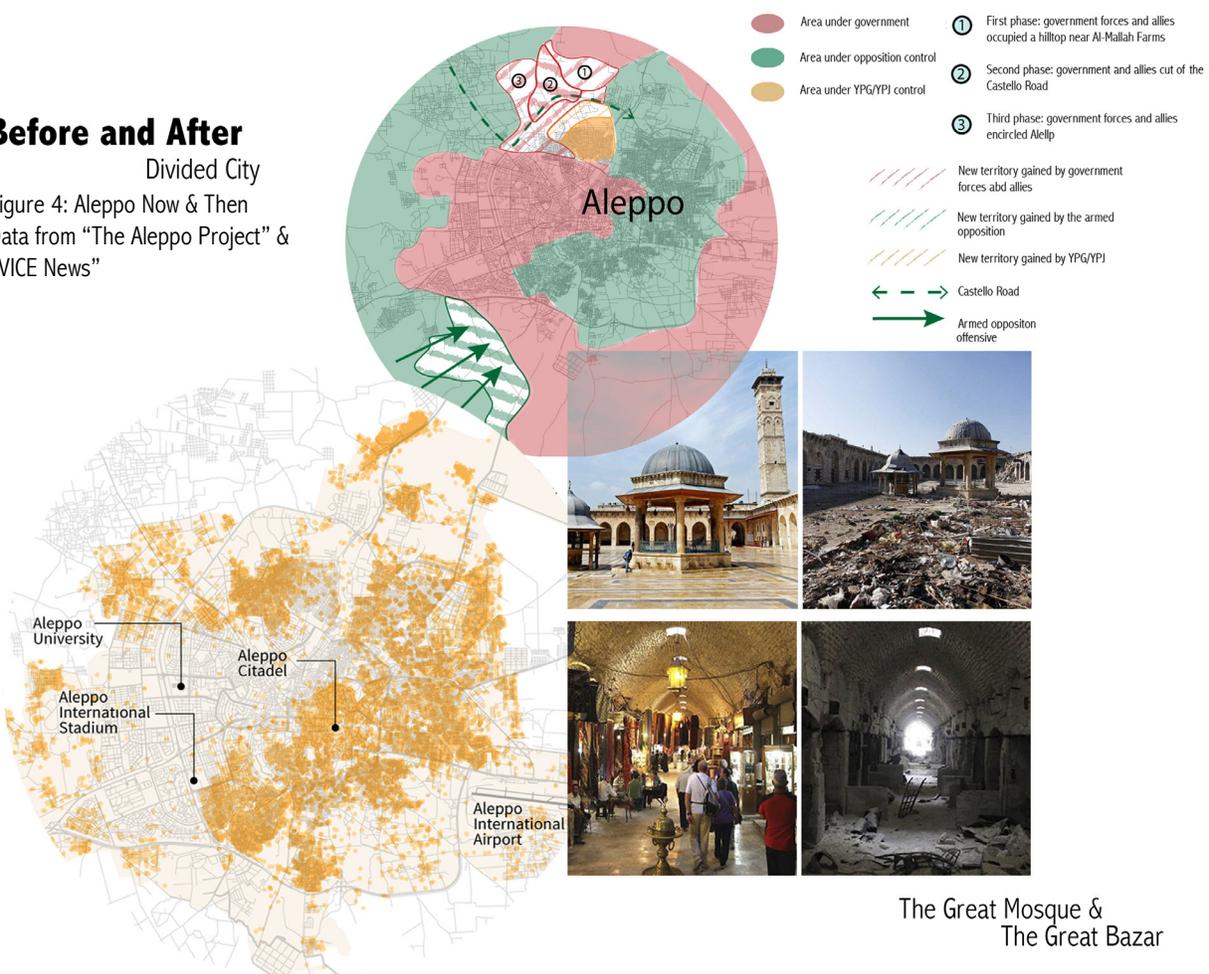
1 Ibid. Lina Sergie Attar

2 Colangelo, A. (2016, December 15). The crisis in Aleppo explained: who’s fighting who and why. Retrieved February 05, 2017, from <http://thenewdaily.com.au/news/world/2016/12/15/aleppo-crisis-war-syria-explained/>

Before and After

Divided City

Figure 4: Aleppo Now & Then
Data from “The Aleppo Project” & “VICE News”



The Great Mosque &
The Great Bazaar

The human rights group, Amnesty International, delivered a report in May 2016 explaining the situation in Aleppo. In describing the city, the report simply states: Aleppo: “Death Everywhere.”¹ Now, the question is, who has stayed in this city, which can possibly be described as the worst place in the world, and why? For some, it has been because they have not been able to escape the situation, and for the others, it is because they have refused to leave. After all, for many, Aleppo is still home and they stayed with hope to begin rebuilding it.² The following testimonials are selected to attest to this idea:

*“I am staying because it is my land and my city. It’s my home. We have nothing to eat. We will run out of bread and fuel in a month. Our best hope is that the siege is broken. But we are not asking for bread or food we want freedom and social justice.”*³

*“Many people would prefer to die in Aleppo than to leave it, if we go out of Aleppo we will lose our home and our home is our life... and the regime and the Russians would win.”*⁴

*“This is our land and it belongs to us. Assad wants us to be kicked out of our house and is trying to displace us. People want to keep their homes. It is as clear as glass.”*⁵

*“As a school principal, leaving was never a choice for me, I believe that we have to educate the new generation and prepare them to, one day, build a future Syria.”*⁶

1 Hamdo, A. H., & Osman, T. (2016, May 06). Violence, loyalty keep people of Aleppo, Syria in ‘worst place in the world’ Retrieved February 06, 2017, from http://www.upi.com/Top_News/World-News/2016/05/06/Violence-loyalty-keep-people-of-Aleppo-Syria-in-worst-place-in-the-world/7991462459024/

2 Ibid

3 Ibid. Ismail, a volunteer for the White Helmets

4 Ibid. Dr. Ossama, one of the last medics left in eastern Aleppo

5 Ibid. Mohammed, east Aleppo resident

6 Ibid. Safwan Badawi, principal of Fatima al-Zahraa elementary school.

Between 2013 and 2015, the battle between Assad forces and the rebels continued, with government forces and their allies such as Russia, on the winning side and causing deaths and massive destruction all over the city.¹ During the conflict, out of a population of two million in Aleppo, approximately one million remained in the West side while only 300,000 remained on the opposition side, due to lack of food, water and shelter.² On July 27, 2016, the government of Assad with the help of Russian forces, fully encircled the Eastern side of Aleppo city. This siege, however, was broken by a rebel counterattack only ten days later. Nonetheless, Russian air forces and government military attacks retook Eastern Aleppo again. Between November and December 2016, numerous attacks on the city forced civilians to evacuate.³ Even today, there are still many civilians left in this area, suffering from a lack of all human necessities.

The fall of Aleppo, was a major victory for Assad's government. Yet, it will not end the civil war. Instead, "It very much improves their [government] position in the north and paves the way for the regime to recover additional territory from the opposition," said Firas Abi-Ali, a Middle East analyst at IHS Markit, a London data and consulting company.⁴ The rebels of East Aleppo, however, will continue to resist regime's forces and fight for their human rights and indeed, for their city and unity.

1 R. (2016, December 14). Timeline: The battle for Aleppo. Retrieved March 05, 2017, from <http://www.newsweek.com/timeline-battle-aleppo-531745>

2 Hamdo, A. H., & Osman, T. (2016, May 06). Violence, loyalty keep people of Aleppo, Syria in 'worst place in the world' Retrieved February 06, 2017, from http://www.upi.com/Top_News/World-News/2016/05/06/Violence-loyalty-keep-people-of-Aleppo-Syria-in-worst-place-in-the-world/7991462459024/

3 R. (2016, December 14). Timeline: The battle for Aleppo. Retrieved March 05, 2017, from <http://www.newsweek.com/timeline-battle-aleppo-531745>

4 Michaels, J. (2016, December 14). Aleppo killings are humanitarian crisis, but not 'genocide'. Retrieved March 05, 2017, from <http://www.usatoday.com/story/news/world/2016/12/14/syria-aleppo-humanitarian-crisis-not-genocide/95423636/>

- Attacks on Schools

It is clearly evident that no side in this war respects the sanctity of schools.¹ One of the many bombardments of Aleppo killed 96 children in one week alone.² Justin Forsyth of UNICEF sates that:

*“Nothing can justify such assaults on children and such total disregard for human life. The suffering and the shock among children is definitely the worst we have seen.”*³

UNESCO has been active in responding to this crisis, however, education remains the gap area when it comes to humanitarian response to the Syria crisis.⁴ Just between January 2014 and May 2015, 22 schools in Aleppo and Damascus were brutally attacked. Syria’s once-proud education system has suffered terrible punishment during these years of war. International humanitarian law, which declares that schools must be respected as zones of peace and safe havens for children⁵, has counted for little, and the regime, of course, has shown no mercy or respect towards schools and the children.

On April 12, 2015, as teachers were finishing up their morning classes at Sa’ad Al-Ansari School at Aleppo city, a helicopter missile struck a half-built apartment on the school’s east side. . Yet, an unexploded warhead and its casing fragments continued on to Sa’ad Al-Ansari School and smashed through the eastern corner of the schoolyard wall and detonated afterwards. Along with missile fragments, the destroyed and broken wall launched over the playground. Shards of glass and missile entered the bodies of innocent children, killing tens and injuring many more.⁶ On May 3rd, 2015, another inhuman attack by government forces with the help of their allies happened in the Saif Al-Dawla Neighborhood of Aleppo, near a school called Al-Ghiras Kindergarten. Sixteen children died in this barrel-bomb attack, with the last victim, a little girl, pulled from the rubble 14 days later.⁷

1 Adams , J. (2015, May 28). The Ruin of Syria’s Schools: Mapping Damaged and Destroyed Schools in Syria. Retrieved March 05, 2017, from <http://syriadirect.org/news/the-ruin-of-syria%E2%80%99s-schools-mapping-damaged-and-destroyed-schools-in-syria/>

2 Alabaster , O. (2016, September 30). Aleppo: ‘Most of the public schools are destroyed’. Retrieved March 05, 2017, from <http://www.rawstory.com/2016/10/aleppo-most-of-the-public-schools-are-destroyed/>

3 Justin Forsyth, the deputy executive director of UNICEF

4 Syria in Brief - UNESCO Response. (n.d.). Retrieved July 05, 2017, from <http://www.unesco.org/new/en/syria-crisis-response/regional-response/syria-crisis-intro/>

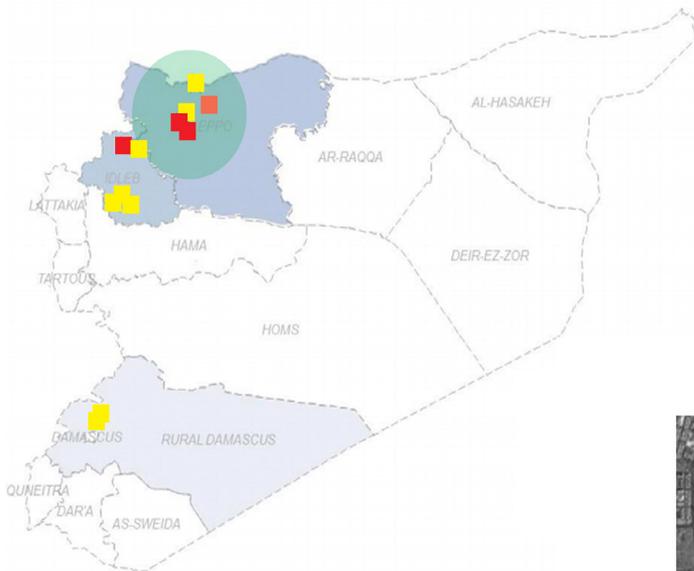
5 Education caught in the crossfire of conflict. (2015, March 12). Retrieved March 05, 2017, from <http://childrenofsyria.info/syria-crisis-4-years-on/education/>

6 Adams , J. (2015, May 28). The Ruin of Syria’s Schools: Mapping Damaged and Destroyed Schools in Syria. Retrieved March 05, 2017, from <http://syriadirect.org/news/the-ruin-of-syria%E2%80%99s-schools-mapping-damaged-and-destroyed-schools-in-syria/>

7 Ibid.

As of today, one in five schools in Syria are either damaged or destroyed. Either that or they are being repurposed into shelters for displaced families.¹ Children have no stable or safe place to study.

1 Ibid.



DAMAGED
ALEPPO
DESTROYED

LIST OF SCHOOLS

- Al-Ghiras - May,02,15
- Sa'ad al-Ansari School - Apr.,11,15
- Al-Kefah School - Feb.,09,15
- Al-Mamoun School - Feb.,05,15
- Al-Kamal School - Oct.,26,14
- Al-Nahda Ash-Shara'iya School - Aug.,10,14
- Al-Madrasa As-San'aiya Al-Khamisa - Aug.,07,14
- Ain Al-Jalut Elementary - Apr.,29,14
- Al-Fardos School - Feb.,02,14

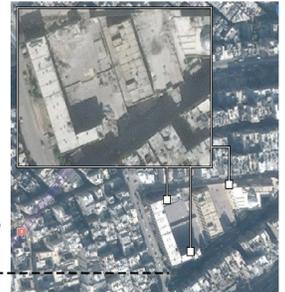


Al-Ansari School - Apr.,11,15
Severe

SCHOOLS

Damaged or Destroyed

Figure 5: School Destruction - Data from "Mapping Damaged and Destroyed Schools in Syria"



Ain Al-Jalut Elementary - Apr.,29,14
Destroyed



Destroyed **Moderate** **Severe**

- Syrian Schools Prior to the Conflict

Education became a top priority in Syria during the Sixties. It had a strong influence over the population. In 2010, before the conflict, about four-fifths of the Syrian population was literate. Syrian people valued (and still value) the need for intellectual development and decent education. The government of Syria is also aware of the value of education, and was previously both supportive and innovative in helping the education system grow. The public viewed education as means towards social progress.¹

The education system in Syria is controlled and run by the state. The Ministry of Education outlines all curriculums, sets teaching initiatives, and provides teaching materials. In 1981, the government passed a law making education free for all Syrian children from grades one to six. With Arabic as the primary language and English and French as the first and second foreign languages, the school system in Syria is divided into primary (1st to 6th), lower secondary (7th to 9th), and upper secondary (10th to 12th) educational levels. According to the 2007 census, 98% of schools in Syria are state-run and 1.8 % are private, with four million in primary education, 1.4 million students in secondary and 2.3 million at higher levels. At the beginning of the 11th grade, students can choose to study in either the Arts or the Sciences and the result of the final exams of the 12th grade will determine whether or not they are entitled to have access to the university level education. It was expected that by 2015, with respect to the growth of the population, the Syrian school system and the government would need to provide for an additional one million students, both in primary and secondary levels, however the recent crisis has significantly changed the picture of this once growing educational system.²

¹ Education in Syria. (2010, February 03). Retrieved March 22, 2017, from <http://www.open.edu/openlearn/society/international-development/international-studies/education-syria>

² Ibid.

- Syrian Education Today

Up until the outbreak of the conflict in 2011, Syrian young people were among the most educated in the Middle East region with near universal primary education enrollment and an adequate rate of school completion. Syria has a long history of learning. The country is home to the first known alphabet and one of the oldest recorded languages still being used today, Aramaic. Sadly, the current economic and social downfall of Syria has damaged years of educational achievements. Over two million Syrian children are currently out of school, both inside and outside the country. Plenty of others are at the risk of dropping out.¹ Since 2015, roughly 5,000 schools have been out of use for educational purposes due to being destroyed or damaged in the war. The Institute of International Education estimates that 450,000 university-age Syrians have become refugees and about 100,000 are believed to be qualified for enrollment in universities.²

In Syria today, four different powers control the education system; the ruling government, the opposition, the Kurdish, and the Islamic State. Syrian education in the government-controlled regions is more stable than in the opposition controlled region, simply because they are relatively “safer”, however, since this relative stability attracts more students, many schools in these regions have overcrowded classrooms and a majority of these schools are running double shifts to accommodate the increasing numbers. Meanwhile, education in opposition controlled regions suffers from unstable enrollment due to the armed struggle and continual shelling. In the majority of opposition controlled areas, schools, however, are still supervised by the Syrian government. They even receive government funding to pay teachers, however insufficient. In these regions, there are some local organizations trying to improve the educational situation by opening institutes and centers for children who have been affected by the war, but the quality of education at these sites is often poor. The educational system in the Kurdish regions is similar to that in government controlled areas. However, in Kobani or Ayn al-Arab (a Kurdish area located near the Turkish borders), the majority of educational buildings were destroyed as a result of brutal armed battles with the Islamic State. Unfortunately, no information is officially available about the educational system in ISIS-controlled regions.³

1 Hessian, M. A. (2016). UNDERSTANDING THE SYRIAN EDUCATIONAL SYSTEM IN A CONTEXT OF CRISIS?, (Rep.) Wien, Österreich: Vienna Institute of Demography Austrian Academy of Sciences. Retrieved March 22, 2017, from http://www.oeaw.ac.at/fileadmin/subsites/Institute/VID/PDF/Publications/Working_Papers/WP2016_09

2 Immerstein, S., & Shaikhly, S. A. (2016, April 4). Education in Syria. Retrieved March 22, 2017, from <http://wenr.wes.org/2016/04/education-in-syria>

3 Hessian, M. A. (2016). UNDERSTANDING THE SYRIAN EDUCATIONAL SYSTEM IN A CONTEXT OF CRISIS?, (Rep.) Wien, Österreich: Vienna Institute of Demography Austrian Academy of Sciences. Retrieved March 22, 2017, from http://www.oeaw.ac.at/fileadmin/subsites/Institute/VID/PDF/Publications/Working_Papers/WP2016_09

The ongoing Syrian crisis has created mass displacement, both within and across Syria's borders and has raised important education-related questions. These include: (1) What will happen if the children of Syria do not get the education they need? (2) What does a 'Lost Generation' mean at the global scale? (3) Would understanding a region's educational background help planners come up with better and more informed solutions for displaced populations? (4) How can a better understanding of the scope of the crisis with its on-going and not-so-safe aspects, help architects to ensure their design solution are appropriate to create safe learning spaces that truly help the ones (children) impacted by the conflict?

It is beyond the scope of this thesis to fully answer these questions or deliver solutions for the events caused by the war. This thesis, will, however, aim to propose a sensitive, economical, functional and well thought-out architectural proposal to support the learning experience for children in Aleppo.

In order to be objective and accurate, the latest report regarding the school situation in Syria has been used as a reference in this. In February 2016, The Assistance Coordination Unit (ACU), a national Syrian non-government, non-political, non-profit institution, published a thematic report on the Syrian School situation. By publishing such report, the ACU's aim was to strengthen the decision-making capacity of aid actors responding to the Syrian crisis. The report states that a total of 3,228 schools were assessed within 85 sub-districts across ten governorates in the month of November 2015.¹ The report also offers a glimpse of the latest data gathered regarding the number of students enrolling in different levels of education, the number of working and non-working teachers, and the number of destroyed or functional schools inside Syria. The largest proportion of enrolled students within assessed schools was in primary schools (grades 1 to 6) with 65.64%, whereas the number of enrolled students in secondary schools has decreased. There is also a balance between the enrollment of male (48%) and female (52%) students. The assessment further covers the number of teachers inside the country; the total number of male and female teachers working in functional schools is 43,814 and 32,737, respectively.²

1 Schools in Syria Thematic Report (Rep.). (2016). The Assistance Coordination Unit. Retrieved July 5, 2017

2 Ibid.

Schools in Syria Thematic & Info-Graphic Report (2011-2016)

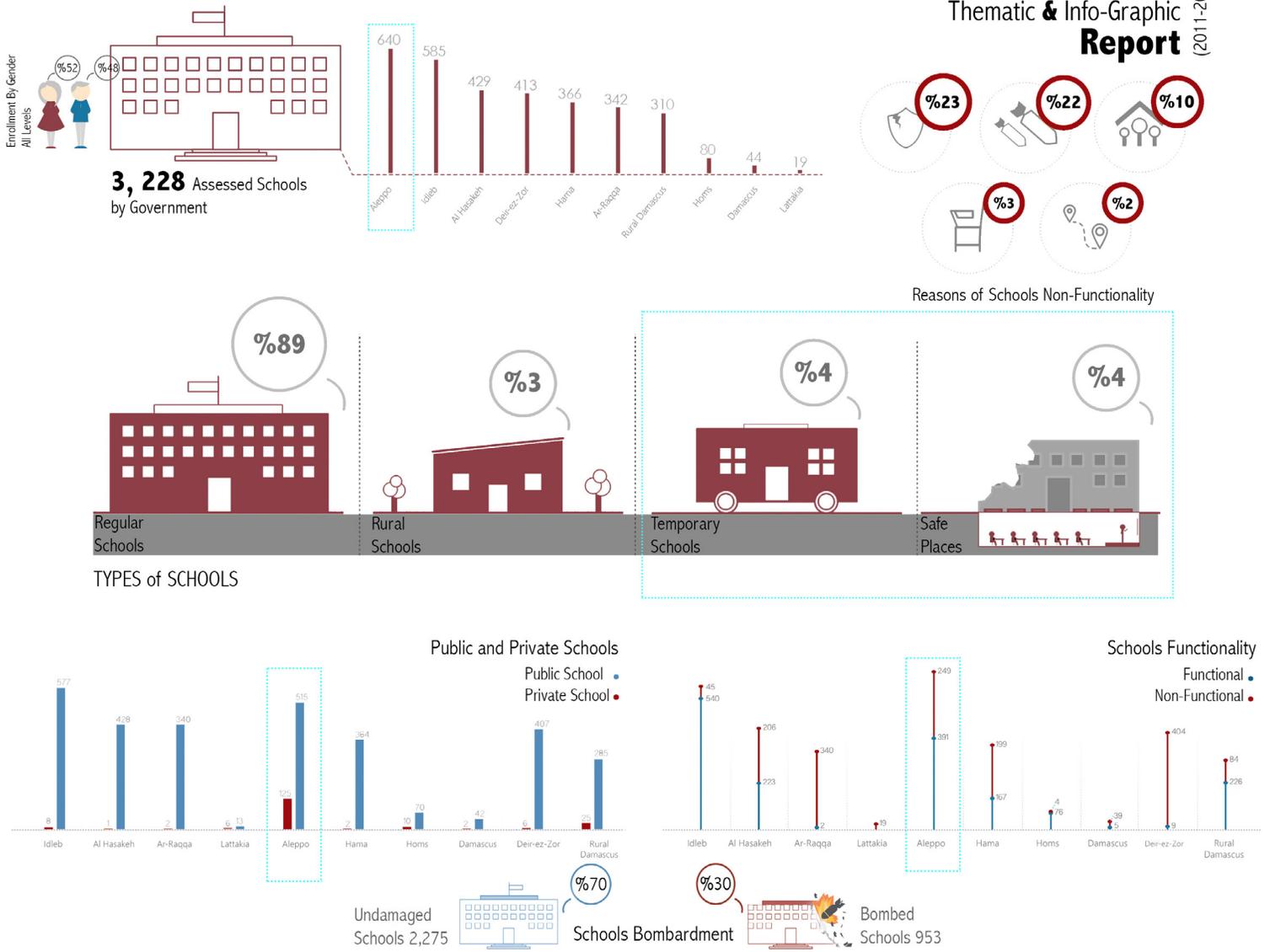


Figure 6: Thematic Report on Schools - Data from "ACU Thematic Report, Feb. 2016"

In terms of schools, the ACU report declares that functioning schools throughout the country are working at less than 84% of their capacity. The main reason for this is insecurity. Students also display hesitation towards enrolling; almost 95% of assessed sub-districts suffer from lack of students showing up for classes, since students and parents consider schools dangerous places and exposed to bombings.¹

¹ Ibid.

This research aims to be as accurate as possible. However, the ongoing and high-intensity conflict in Syria has limited the scope of data collection. Nonetheless, the goal still remains, to propose an opportunity for children in Syria to gain access to education. This architectural project has the objective to reduce the chances of schools getting destroyed simply because they are next to a targeted landmark or a building. It can work to slowly dissipate the feeling of insecurity among the children. As mentioned, this architectural proposal of mobile spaces for learning will focus on the city of Aleppo.

- Flexible Architecture

The very first manmade architectures, thousands of years ago, weren't exactly high-rise buildings or extraordinarily decorative assemblies. They were mostly portable, easy to assemble structures made out of local materials, assemblies that could get dismantled, moved and reassembled for a number of reasons, from extreme weather to enemy attacks. This form of architecture still influences design today, mainly in two categories; (1) mobile structures for events or exhibitions and (2) mobile/temporary shelter in extreme conditions or in the aftermath of natural disasters and conflicts.¹

It is not feasible to create complex or large structures in extreme conditions or in the middle of a conflict or a natural disaster or even in the immediate aftermath of one. Serious limitations on resources and access to stable foundations are just some of the reasons for this. Therefore, designing mobile architecture becomes increasingly important in these conditions and social contexts.² Displaced children in Syria attend schools in caves and caravans. They consider such places safer and more secure.



Figure 7: Caves



Figure 8: Caravans

¹ Architecture competition Organizers. (2016, February 11). Mobile Architecture. Retrieved July 5, 2017.

² Ibid.

- People's Canopy

Designs for mobile architecture does not always have to be complex and overdone. The People's canopy, designed by Beijing-based designers, People's Architecture Office, represents architecture as a platform for events and as an event itself. The people's canopy is set on bicycle wheels and can be cycled throughout the city. Additionally, when parked, it can be opened like an accordion to 12-meters in length and at a span of ten meters, turning unused areas into potential event spaces.¹



Figure 9: People's Canopy



Figure 10: People's Canopy

¹ Ibid.



Figure 11: People's Canopy



Figure 12: People's Canopy

- Mobile Health Clinic to Combat HIV/AIDS

It is estimated that three-quarters of the world's AIDS infected population lives in Sub-Saharan Africa. Out of this population, most have no access to lifesaving drugs or testing facilities. One of the major factors preventing this is the inability to access vast areas of the continent, in particular, areas with sufficiently equipped medical facilities.¹ Architecture for Humanity challenged the world's architects to submit designs for a mobile HIV/AIDS health clinic, and in November 2002, they announced the winner and as well as other notable entries. The design by KHRAS, a Danish based firm, was rewarded with the first place title. According to the judges, the project frame was designed to fit within the footprint of a standard container and can therefore be moved easily using various modes of transportation. Local materials that were woven into the lightweight metal skeleton added local texture and value to the project.²

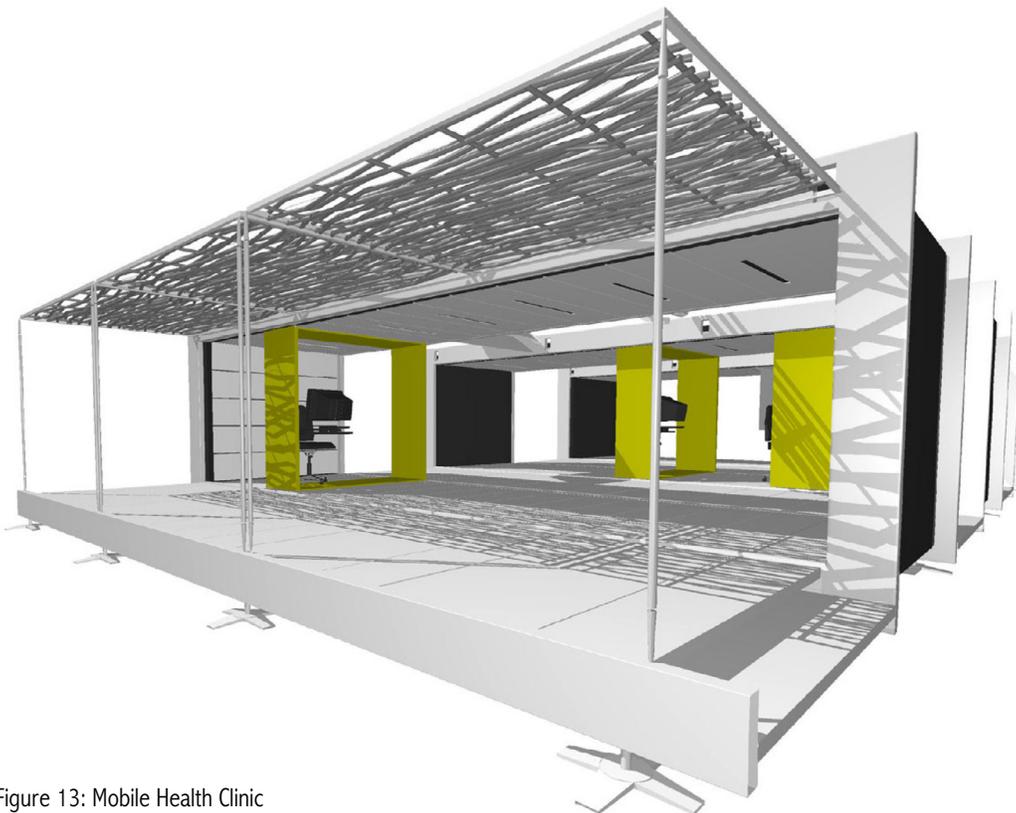


Figure 13: Mobile Health Clinic

¹ Architecture for Humanity. (2002, November). Mobile Health Clinic to Combat HIV/AIDS in Sub-Saharan Africa [Press release]. Retrieved July 5, 2017, from <http://csinclair.readyhosting.com/images/mini.pdf>

² Ibid.



Figure 14: Mobile Health Clinic (winner)

*“Architecture is basically a container of something. I hope they will enjoy not so much the teacup,
but the tea.”*
-Yoshio Taniguchi-

4

- Need and Impact

Evidently and regrettably, achieving the right to education for all is one of the biggest challenges of our times. As mentioned in the introduction of this thesis, article 13 of the International Covenant on Economic, Social, and Cultural Rights (UNESCO, 2003) articulates:

“Education is both a human right in itself and indispensable means of realising other human rights. As an empowerment right, education is the primary vehicle by which economically and socially marginalized adults and children can lift themselves out of poverty and obtain the means to participate fully in their communities. Education has a vital role in empowering women, street working children from exploitative and hazardous labour and sexual exploitation, promoting human rights and democracy, protecting the environment, and controlling population growth”.¹

Any response in the education sector needs to ensure students’ continuation of their education and to facilitate the return of students who have dropped out of school. The United Nations Children’s Fund (UNICEF) is the leading organization in providing for these students. However, difficulty and scarcity in the arrival of humanitarian aids and accessibility within the education sector is one the major challenges facing such organizations.² Therefore, Organizations like UNICEF are always in search for ways to bring the right to education to any child, anywhere in the world, who is being neglected and denied this fundamental human right.

¹ Aderinoye, R., Ojokheta, K., & Olojede, A. (2007). Integrating Mobile Learning into Nomadic Education Programmes in Nigeria: Issues and perspectives (Unpublished master’s thesis). University of Ibadan, Nigeria. Retrieved July 5, 2017, from <http://www.irrod.org/index.php/irrod/article/view/347/919>

² Schools in Syria Thematic Report (Rep.). (2016). The Assistance Coordination Unit. Retrieved July 5, 2017.

- Narrative, Assembly, and Programming

November 1, 2016, in the Western Aleppo countryside, Russian planes destroyed five schools during the exam period while targeting other landmarks.¹ Prior to that, from February 2014 to May 2015, nine other schools had been either damaged or completely destroyed, killing and injuring a number of innocent children and other civilians.² Aleppo has 45 schools (public and private) operating at all levels of education. Maps and collected data indicate that out of those 45 schools, nine have been damaged or destroyed and seventeen have no pinned or official location in the city. As mentioned before, schools are exposed to shelling and shooting. Children are afraid to go to school and they prefer local, more easily accessed locations for their education. They prefer alternative modes of learning, like caves and caravans, however small and primitive.

“Mobile learning” is a term used to refer to the use of any mobile or wireless device for learning on the move. It relates to any service or facility that supplies general educational content to a learner and helps in their acquisition of knowledge, regardless of location and time.³ Generally, there are three ways in which learning can be considered mobile: (1) learning is mobile in terms of space, (2) learning is mobile as it applies to different areas of life, and 3) learning is mobile with respect to time.⁴ These definitions, offered by Kinshuk, indicate that any given mobile learning system should be capable of delivering educational content to learners anytime and anywhere if need be.⁵ Mobile learning, as a fresh and different approach to education, encourages flexibility via creating a mobile space.⁶

1 Ibid.

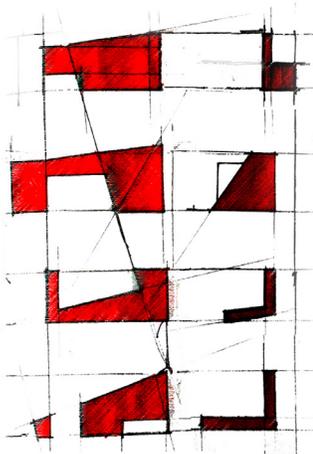
2 The Ruins of Syria's School: Mapping Damaged and Destroyed Schools in Syria. (n.d.). Retrieved July 05, 2017, from <http://syriadi-rect.org/news/the-ruin-of-syria%E2%80%99s-schools-mapping-damaged-and-destroyed-schools-in-syria/>

3 Aderinoye, R., Ojokheta, K., & Olojede, A. (2007). Integrating Mobile Learning into Nomadic Education Programmes in Nigeria: Issues and perspectives (Unpublished master's thesis). University of Ibadan, Nigeria. Retrieved July 5, 2017, from <http://www.irrod.org/index.php/irrod/article/view/347/919>

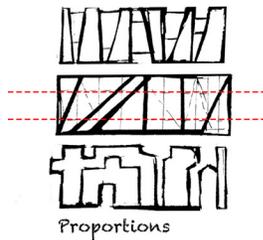
4 Ibid.

5 Ibid.

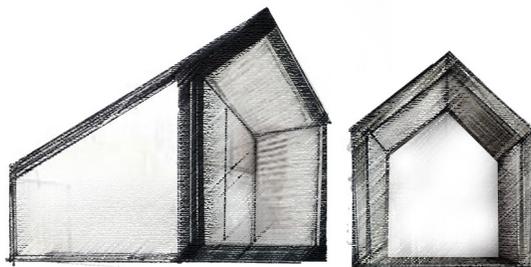
6 Ibid.



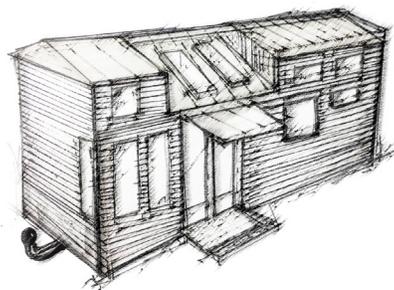
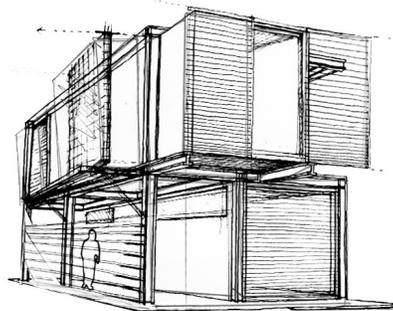
Facade Studies



Proportions

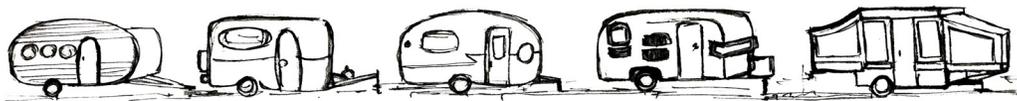


Experimental Sketches



Possible Point(s) of Entry

Choosing a trailer is a fundamental step in designing this mobile space. The trailer will be the base for this construction. Therefore, research regarding types of trailers was conducted in order to understand their capabilities and limitations. As far as different types of trailers go, there are probably too many to name. However, *flatbed trailers*, popular in the construction of *tiny trailer houses*,¹ were chosen for this research since they are small and can provide the sufficient space needed for this project. Generally, a flatbed can load weight on its ends, sides, and rear. These capabilities have made flatbeds the leading assets in the trucking industry. However, they do have limitations when it comes to maximum weight, length and height of the load. They also come in different sizes and types. A flatbed is typically either 48' or 53' in length and 102" (8' 6") in width, allowing the transporting of loads as wide as 102" with a maximum freight weight of 48,000 pounds. Freight can be safely loaded from all sides of the trailer.² Flatbed trailers come in four different styles: (1) As a deck-between, which is a kind of flatbed trailer where the bed of the trailer sits between the wheel wells, (2) A deck-over, which means the bed of the trailer is located over the top of the wheels, (3) A dovetail, which can be a deck-between or a deck-over trailer, but includes a section at the rear of the trailer that angles to the ground, and (4) A gooseneck, where the trailer can be either a deck-between or deck-over trailer, just like a dovetail, but with a special hitch connection; the trailer hitches to the bed of a truck that is fitted with a ball hitch.³ There are five classes of trailer hitches available that attach the vehicle to the trailer in general. Hitches have different capacities for different weights; these are referred to as *tongue weights*.⁴



1 Flowers , J. (2016, August 28). Building a Tiny House on a Trailer: What You Need to Know. Retrieved July 05, 2017, from <https://learn.compactappliance.com/tiny-house-trailer/>

2 FRC logistic Inc. (n.d.). Truckload Trailer Types and Modes of Freight Transportation. Retrieved July 05, 2017, from <https://www.freightratecentral.com/trucking-companies/flatbed-trucking-trailer-types>

3 Trailer 101. (2017, February 15). Retrieved July 05, 2017, from <https://www.tumbleweedhouses.com/expert-advice-how-to-resources/trailer-101/>

4 Flowers , J. (2016, August 28). Building a Tiny House on a Trailer: What You Need to Know. Retrieved July 05, 2017, from <https://learn.compactappliance.com/tiny-house-trailer/>

FlatBed



Assembly & Trailer Spec.

Types of FlatBed Trailers

- Deck-Between
- Deck-Over
- Gooseneck
- Dovetail



Deck-Between
Bed between the wheel wells



Deck-Over
Bed over the top of the wheels



Gooseneck
Deck-Between/Deck-Over
with special hitch connection



Dovetail
Deck-Between/Deck-Over
with a section that angles to the ground at rear

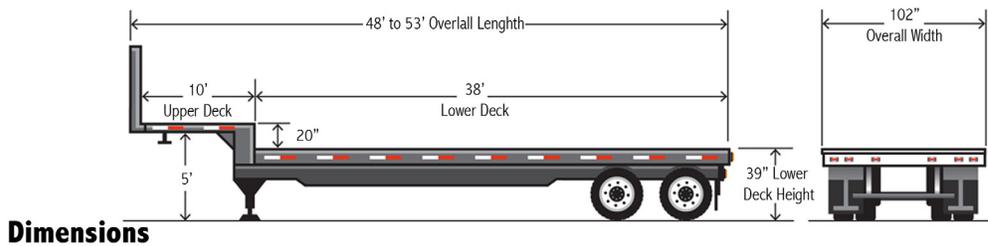
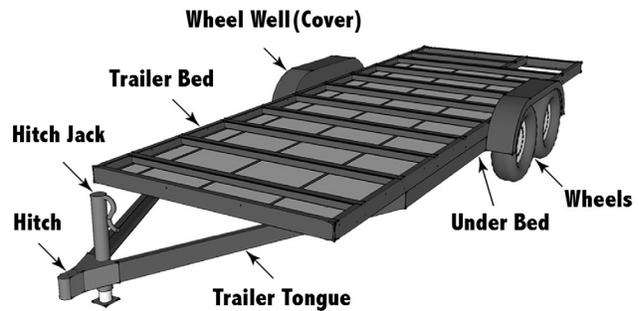


Figure 15: FlatBed Trailer - Data from "<https://www.tumbleweedhouses.com/>"

The towing vehicle does not need to be connected to the trailer at all times. However, to assemble a mobile learning space, a truck is necessary. Information regarding the type of vehicle suggests that for the most part, a full-size truck or a large SUV will have enough power and would be sufficient for such a task. When it comes to picking a vehicle, there is no one-size-fits-all solution. Generally, the experts divide the weight of the loads into four different brackets; Light-to-Medium Duty (they can handle up to 3,500 pounds), Medium-to-Heavy Duty (which can handle up to 5,000 pounds), Extra-Heavy Duty (which can handle up to 10,000 pounds), and Super-Heavy Duty, (which can handle a load of more than 10,000 pounds.)¹

For the purposes of this design proposal, 1) the learning space’s potential weight (for realistic construction, assembly and transportation purposes) 2) the ideal class size (fifteen students and one teacher while in transport), 3) the mixture of both boys and girls aged between six to twelve with various heights and weights and diverse needs, were considered carefully. Indeed, the large age gap between a six year old and a twelve year old would have made some serious difficulties and unquestionable concerns in what materials to study, i.e. whether or not the teacher should follow the regularity and set colloquiums or should the teacher focus more on group learning. However, the nature of the conflict (limitation in all possible fronts) leaves no room for a complex system. Students need to learn life skills while studying mathematics and that’s no easy task. Ideally, volunteers, mothers and fathers, can be the main source of inspiration for this young generation. Each individual can offer something valuable, from teaching science to art to mathematics all the way to holding hands on workshops; they can all contribute to this cause. Some can even drive and help out the driver or switch shifts with the teacher.

Figure 16: Weight Chart - Data from “<https://www.disabled-world.com>”

Female Children			Male Children		
Age	Weight	Height	Age	Weight	Height
2 yrs	26.5 lb (12.0 kg)	33.7" (85.5 cm)	2 yrs	27.5 lb (12.5 kg)	34.2" (86.8 cm)
3 yrs	31.5 lb (14.2 kg)	37.0" (94 cm)	3 yrs	31.0 lb (14.0 kg)	37.5" (95.2 cm)
4 yrs	34.0 lb (15.4 kg)	39.5" (100.3 cm)	4 yrs	36.0 lb (16.3 kg)	40.3" (102.3 cm)
5 yrs	39.5 lb (17.9 kg)	42.5" (107.9 cm)	5 yrs	40.5 lb (18.4 kg)	43.0" (109.2 cm)
6 yrs	44.0 lb (19.9 kg)	45.5" (115.5 cm)	6 yrs	45.5 lb (20.6 kg)	45.5" (115.5 cm)
7 yrs	49.5 lb (22.4 kg)	47.7" (121.1 cm)	7 yrs	50.5 lb (22.9 kg)	48.0" (121.9 cm)
8 yrs	57.0 lb (25.8 kg)	50.5" (128.2 cm)	8 yrs	56.5 lb (25.6 kg)	50.4" (128 cm)
9 yrs	62.0 lb (28.1 kg)	52.5" (133.3 cm)	9 yrs	63.0 lb (28.6 kg)	52.5" (133.3 cm)
10 yrs	70.5 lb (31.9 kg)	54.5" (138.4 cm)	10 yrs	70.5 lb (32 kg)	54.5" (138.4 cm)
11 yrs	81.5 lb (36.9 kg)	56.7" (144 cm)	11 yrs	78.5 lb (35.6 kg)	56.5" (143.5 cm)
12 yrs	91.5 lb (41.5 kg)	59.0" (149.8 cm)	12 yrs	88.0 lb (39.9 kg)	58.7" (149.1 cm)

The average weight of a child between the ages of six to twelve (both females and males)

¹ Ibid.

Due to limitations on accessing data regarding the availability of materials and resources in constructing the learning mobile unit, the design development would more likely be prefabricated elsewhere (outsourced), with parts that could be installed at the site of use. By doing so, the notion of local participation in assembling the parts will keep things practical. Intuitively, considering the nature of this project, the unit must be adaptable in its construction and usage; therefore, the framing and the materials being used in making the unit need to be relatively light and their details must be simple enough for on-site assembly. Additionally, considering surface limitations, having extendable and modular elements with multi-functional operation systems is indeed a crucial and relevant design scheme.

The “*school on wheels*” can be used when parked, as a stationary element that can facilitate holding classes both inside and outside. It is compact with essential facilities, therefore, easy to dismantle and be put back together (in the event of an attack). Three parks and a road have been chosen after careful consideration to represent the context and possible sites for this project. Operational elements, road condition, accessibility to different neighbourhoods, distance to safe areas, the cluster of existing schools, and the boundary between the East and the West side of the city are just few elements that were considered in the process of choosing these potential sites.



IN THE STREETS OF ALEPPO

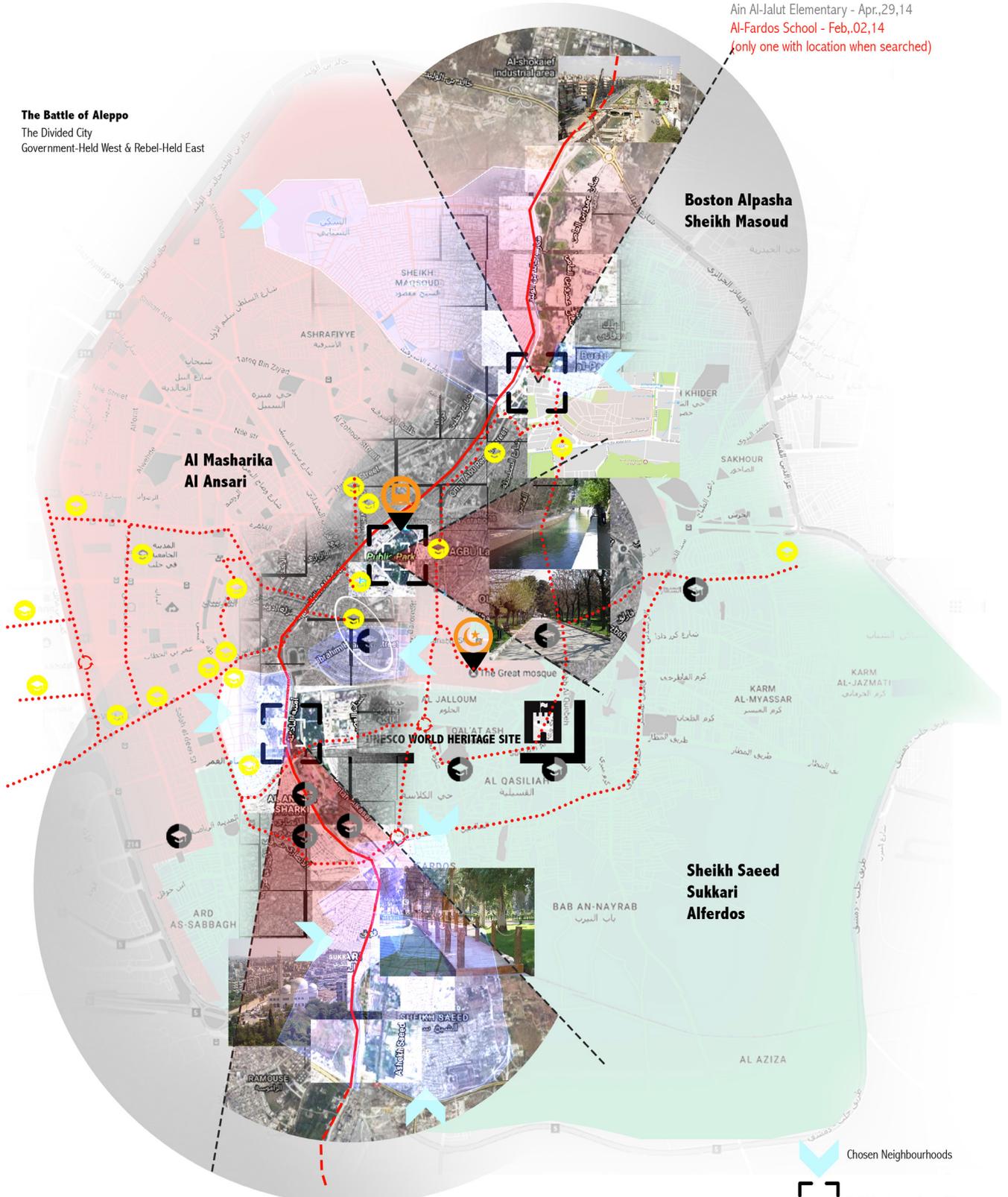




18 Missing Schools

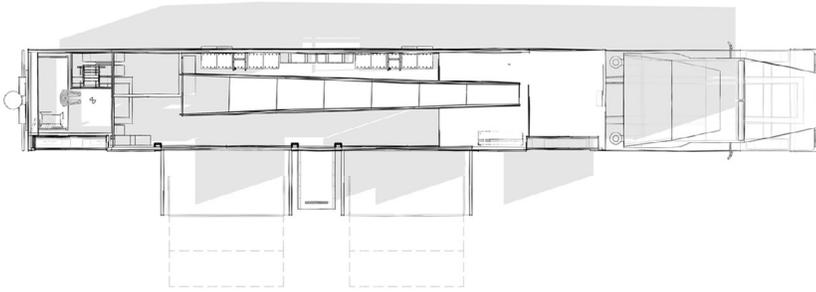
- Total Number Of Schools**
State Owned (Total) 23 & Private (Total) 22
- Schools With A location**
#: 18
- Damaged - Destroyed - Moderate**
Al-Ghiras - May,02,15
Sa'ad al-Ansari School - Apr.,11,15
Al-Kefah School - Feb., 09,15
Al-Mamoun School - Feb., 05,15
Al-Kamal School - Oct., 26,14
Al-Nahda Ash-Shara'iya School - Aug.,10,14
Al-Madrasa As-San'aiya Al-Khamisa - Aug.,07,14
Ain Al-Jalut Elementary - Apr.,29,14
Al-Fardos School - Feb.,02,14
(only one with location when searched)

The Battle of Aleppo
The Divided City
Government-Held West & Rebel-Held East



- Chosen Neighbourhoods
- Public Park - Stationary Sites
- Main Road
- Alternative Roads

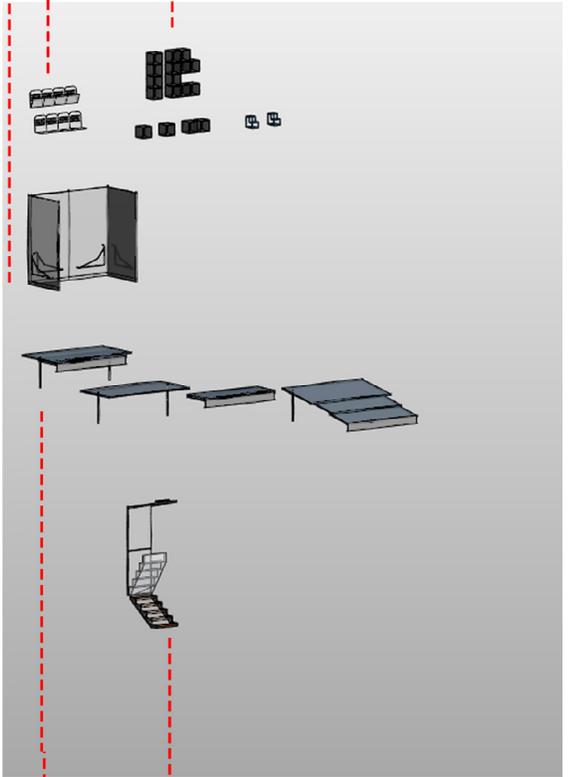
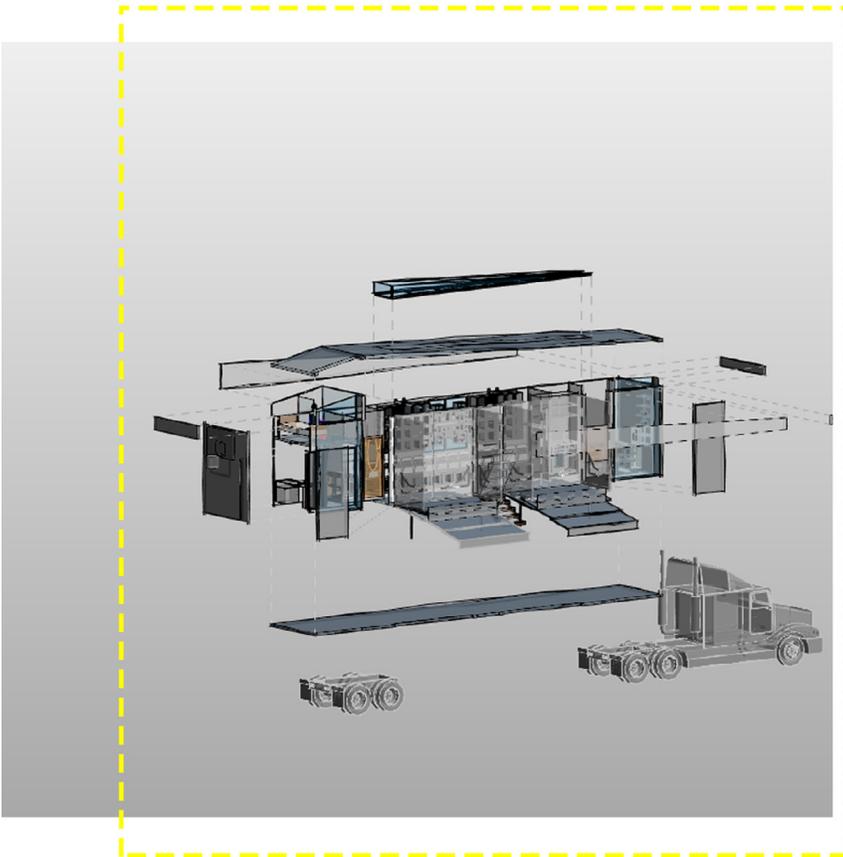
EXPLODED AXO SCHOOL ON WHEELS



Operable Doors

Seats For Safety

Shelving Units



Pull-Out Extenders

Airstairs



NEIGHBORHOOD : SHEIKH SAEED

"I would like my architecture to inspire people to use their own resources, to move into the future."

Tadao Ando

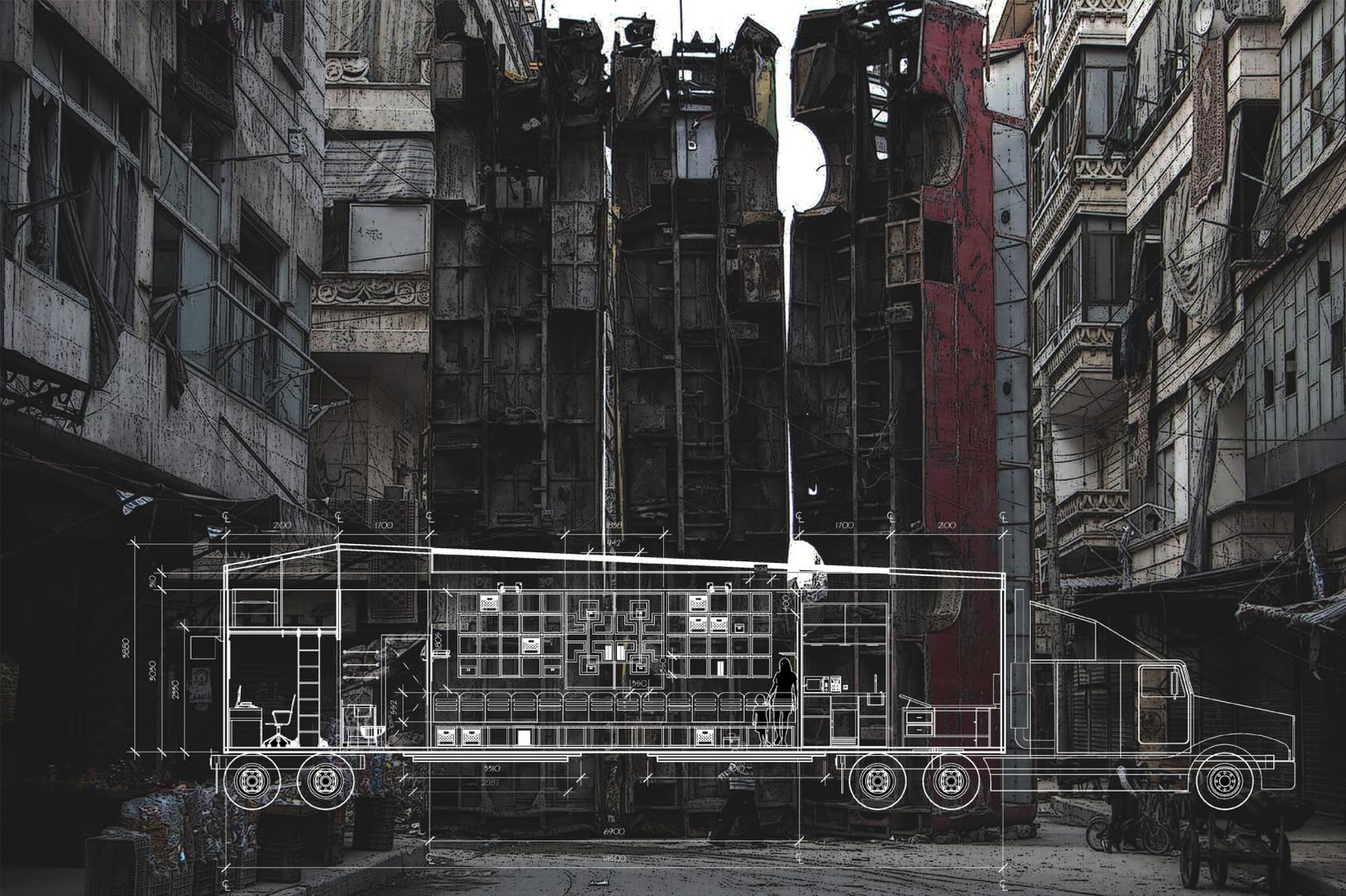
Learning, as an activity, is not something to be hidden. Therefore, the school on wheels has no intention to camouflage itself. It travels through the city; it arrives at a destination and anchors itself to a community and its children; then it commutes children back to their homes/communities and returns the next day. While on the move, its very nature, being recognizable as a school, with transparency and translucency embodied in its design, reduces the risk of attacks or being destroyed as a collateral damage. Authorities are likely not to confuse it with some other vehicle, carrying soldiers, or weaponry. Its ability to be condensed inside a trailer, helps transporting the children, if need be, from one location to another, in case something strikes from the sky or the ground.

The interior of the unit is divided into five main sections with two sets of detachable shelving systems made out of light material(s) such as Plywood*, with different shapes and distances from the floor, (to accommodate all students with various heights), that can be used for both seating and storing. The middle and longer segment is where multi-use shelves, storage systems, and secure chairs (used in student transportation) are located. Service areas (kitchen and wash-room), one small first-aid room (clinic), and a teacher's office with an upper floor resting area, are located at each side of the unit. The purpose of the upper floor resting area is to facilitate the personnel's needs in case of limited recourse, i.e. the two tasks, teaching and driving, might need to be conducted by one individual, or to simply provide shelter if need be. Two display systems that occupy the corners of the frontal façade are used as small exhibition surfaces/spaces, to showcase students' work, thus encouraging more students to join while a class is being held.

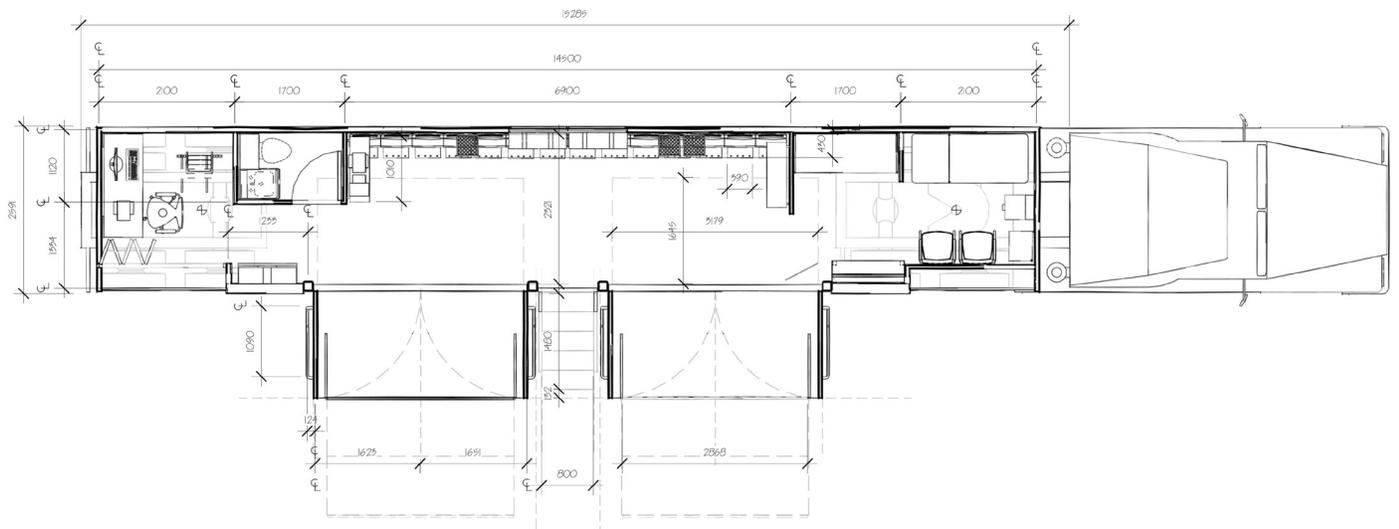
*Plywood is made of three layers of wood, bound with a strong wood glue with an average consistency in density across the cross section of the board. The average density for a medium-quality pine plywood board is 600 kilograms per cubic meter.



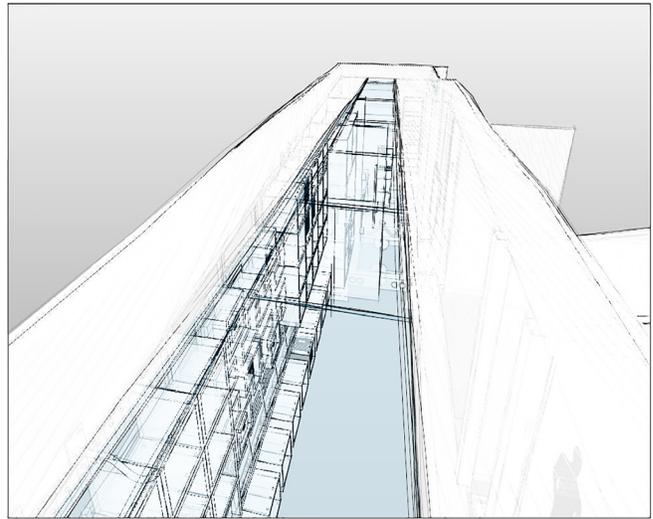
WEST ALEPPO



NEIGHBORHOOD : AL ANSARI



DETAILED SECTION AND PLAN



INTERIOR VIEWS



INTERIOR VIEWS



As shown in the drawings, one façade can be opened, fully or partially, while the other one is closed. The closed façade can be used as a blackboard, even though it also has some transparent and translucent sections, revealing the interior of the unit. The pull-out extenders can be opened partially or fully to provide a wider surface; once the school on wheels is stationary, they can be used as a ramp, a seating arrangement or a podium. Additionally, the operable doors can be used as educational boards both when closed or opened.

Having the safety of children in mind, all elements are carefully designed in this project; from airstair to seamlessly designed guards along the edges of the pull-out extenders, to the handrails on the doors to mounted or detachable interior features. The intention of this thesis has been to propose a comprehensive yet intermediate safe space for learning, for as many communities as possible. The school on wheels can do this in the city of Aleppo.

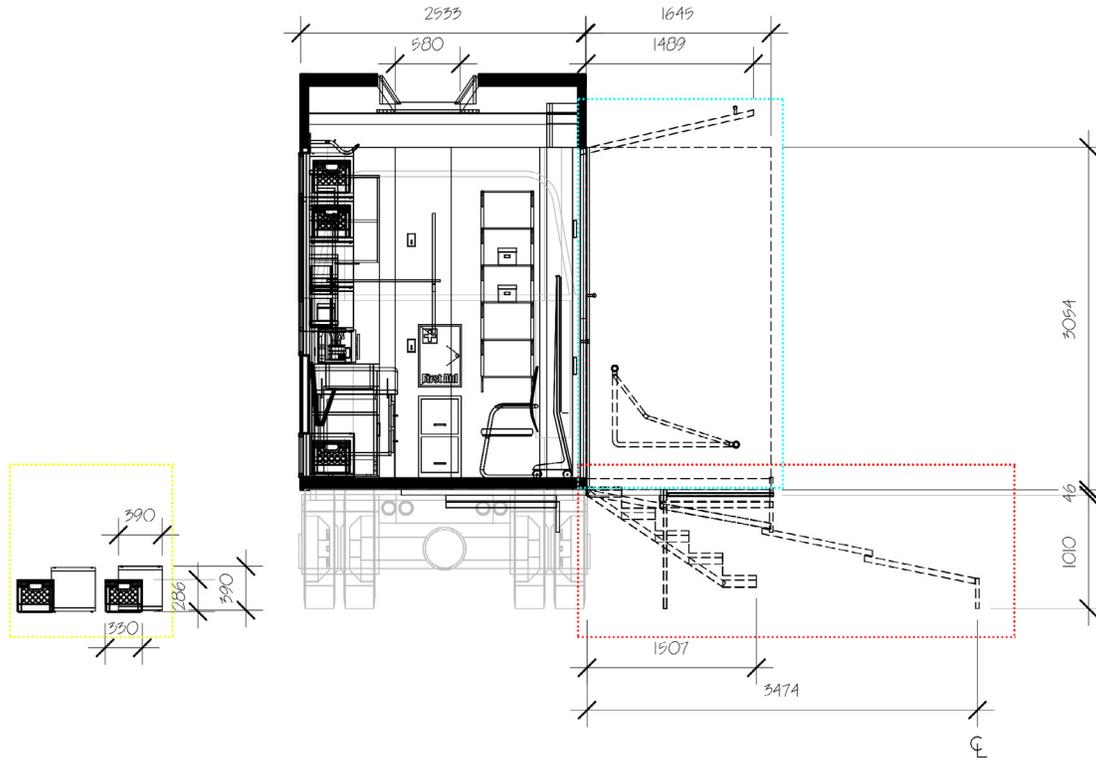
NEIGHBORHOOD : AL MASHARIKA





NEIGHBORHOOD : SHEIKH MAGSOUD

Students getting lessons using the pullout extenders as seats, while teacher uses the operable doors as display boards. As mentioned early on, due to the nature of the conflict, having separate classrooms for students in various age groups is not a practical approach for the purposes of this design proposal. However, to bring diversity, however mundane, a series of different sitting arrangements were designed to accommodate all the children. As shown above, some are more playful than the others.



- Pull-out Extenders (3 layers ramp system + Legs + Floor Extension)
- Operable Doors (Pull-down Stairs + Pull-Up door/window + Lock in place hinges)
- Shelving Units (Can be used as chairs when classes are being held outside)

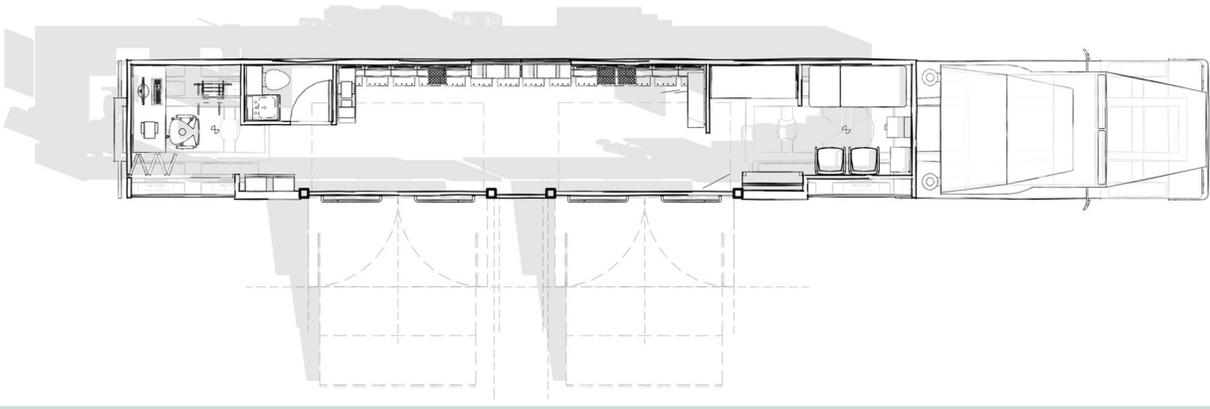
DETAILED SECTION



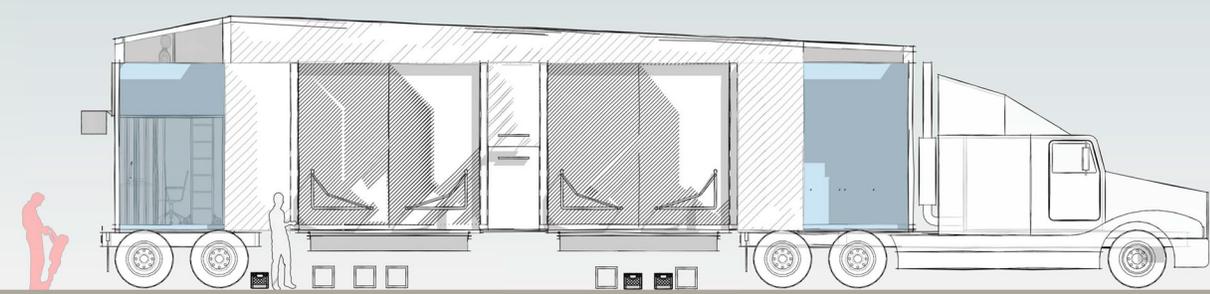
NEIGHBORHOOD : BOOSTAN AL PASHA

Students and parents are getting to know the school while soldiers are on the run, saving the city, and volunteers/ locals are helping setting up a class ... Life goes on in the streets of Aleppo.

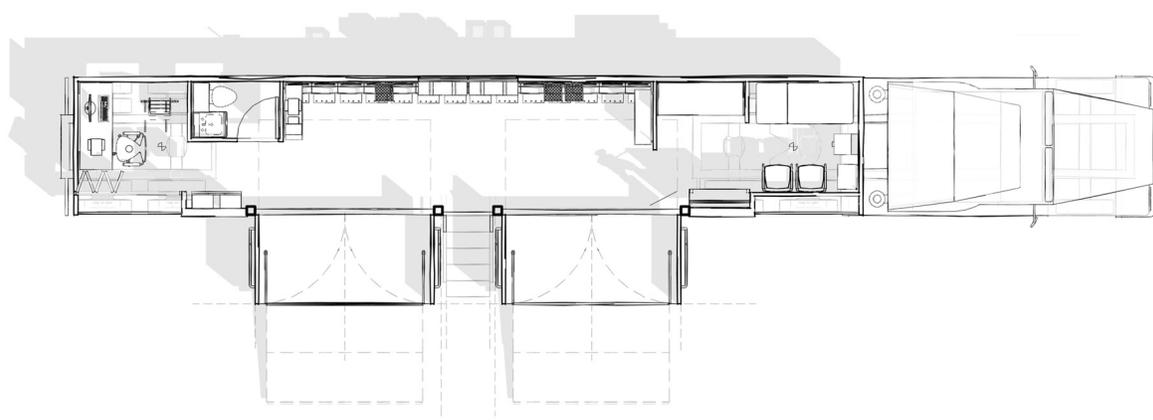
FIRST LIGHT



RECESS



ILLUMINATION

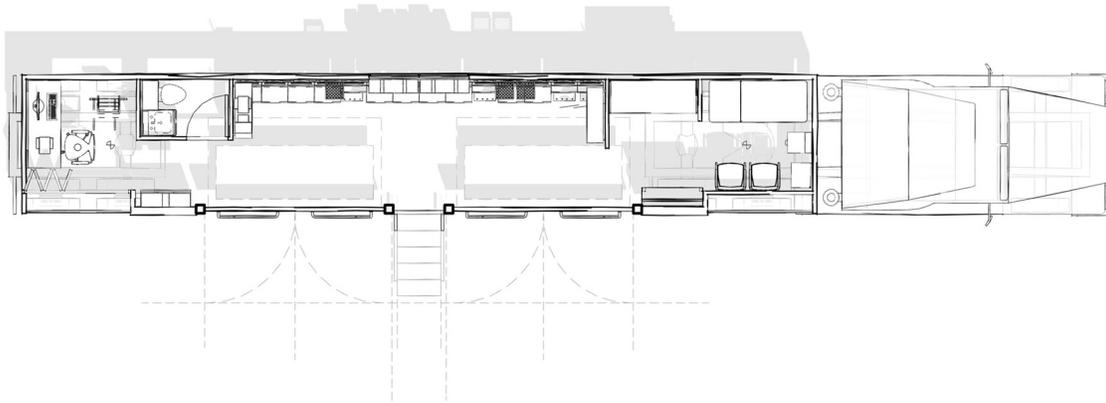


TIE-UP

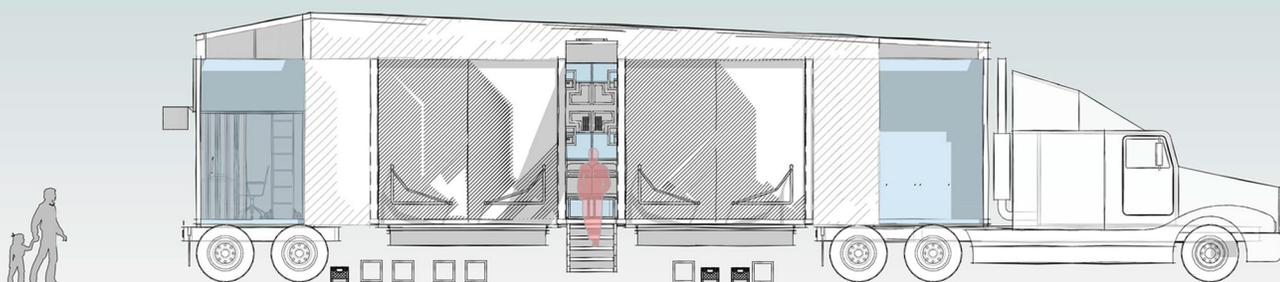


PLAN / ELEVATION

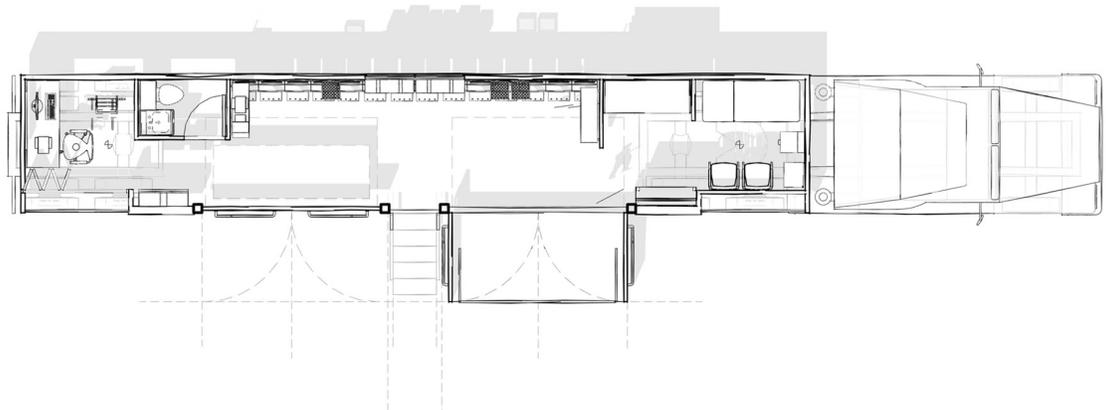
PLAYTIME



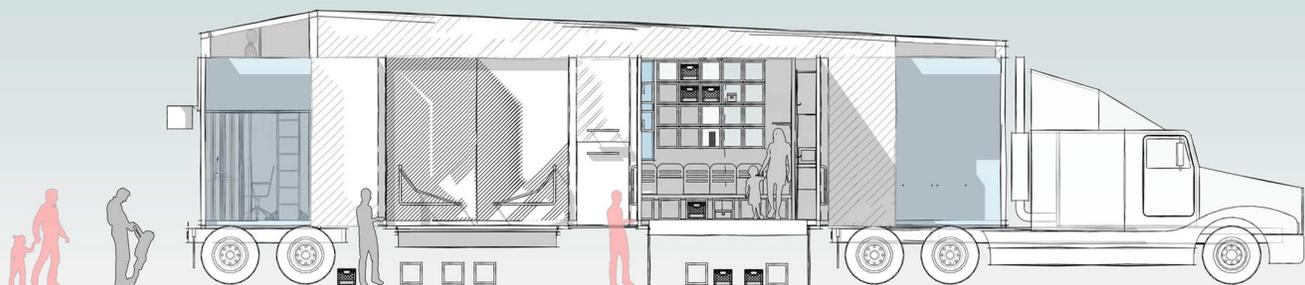
HAPPENING



O'CLOCK



INTERPOSE



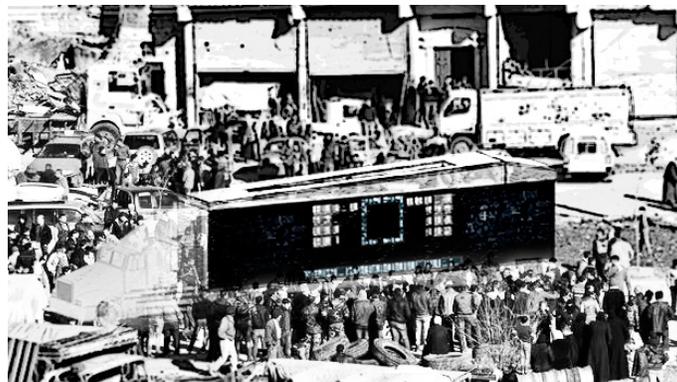
PLAN / ELEVATION

CONCLUSION



NEIGHBORHOODS: SUKKARI AND AL FARDOS

As of today, more than thirteen million people inside the Syrian Republic are in serious need of humanitarian assistance, while 6.3 million, are displaced their own country. Half of these internally displaced persons (IDP) are children who are struggling to survive and cope with the crisis. All Syrians and specially the younger generation need to regain access to their human rights. Education is one of the most important and fundamental rights among all. It is reported by the UNESCO that an estimated 8.1 million Syrian children and youth between the ages of five to seventeen are in need of education, both inside Syria and in neighbouring countries. The aim of this research has been to undertake a sensitive and realistic towards the crisis and propose an architectural project that could support Syrian children in their journey towards recovery. In doing so, my aim was to identify the urgency of future developments in Syria, in particular, within the city of Aleppo. The intention was to contribute to understanding the immediate steps needed for rebuilding. It was concluded that the best approach would be to offer an intermediate place for knowledge rather than a permanent school construction. A mobile learning space can bring education back to students and help eliminate the destruction of schools as collateral damage. The mobile locality of such schools, their unrestricted points of arrival, departure and anchorage, along with multifunctional elements that fit in a footprint of a standard container, can facilitate holding classes when need be, and be on the move when classes are over. Any long or short-term development in Syria (whether or not in the sphere of education) needs to ensure contribution to Syrians needs, as they recover and regain strength, preparing them for what a future beyond conflict may hold. “*School on the wheels*” was an offering to children of Aleppo. It proposed an architectural platform that could help eliminate or reduce the risk of attacks and created opportunities for a more hopeful future by giving the children a safer and a more desirable space to educate themselves. However, considering its unique characteristics, being compact and self sufficient, such assembly can be used in similar unfortunate event around the globe i.e. the aftermath of hurricane Irma.



NEIGHBORHOOD : AL ANSARI

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APPENDIX

- Data collection (maps)
- Videos
- The Art of Healing: Syrian Refugee Children Express Themselves
(Students Drawings Inspirations)

Figure 17: Areas of Influence in Syria
 Data from *Schools in Syria Thematic Report*

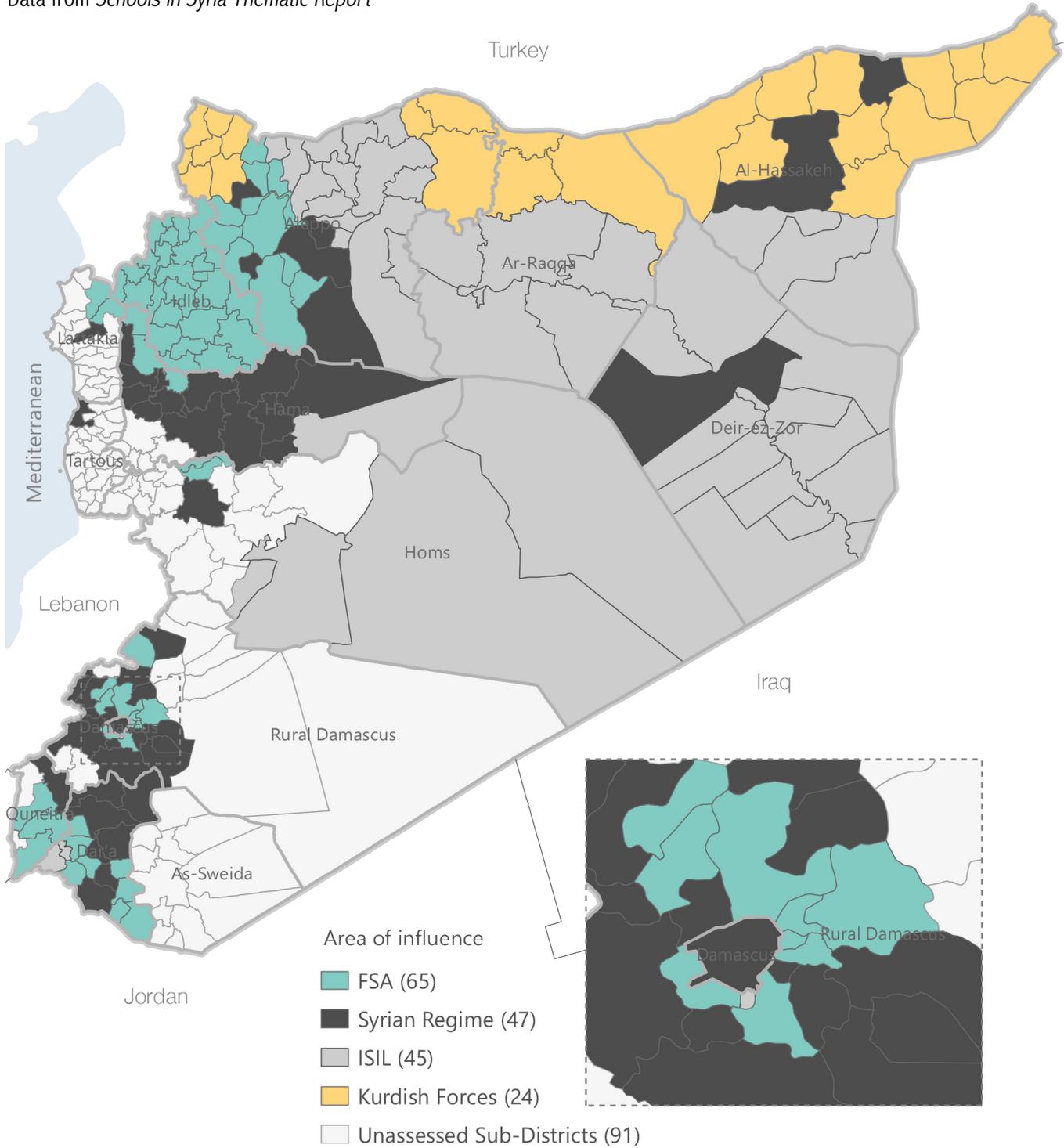


Figure 18: Percentage of Bombed Schools
 Data from *Schools in Syria Thematic Report*

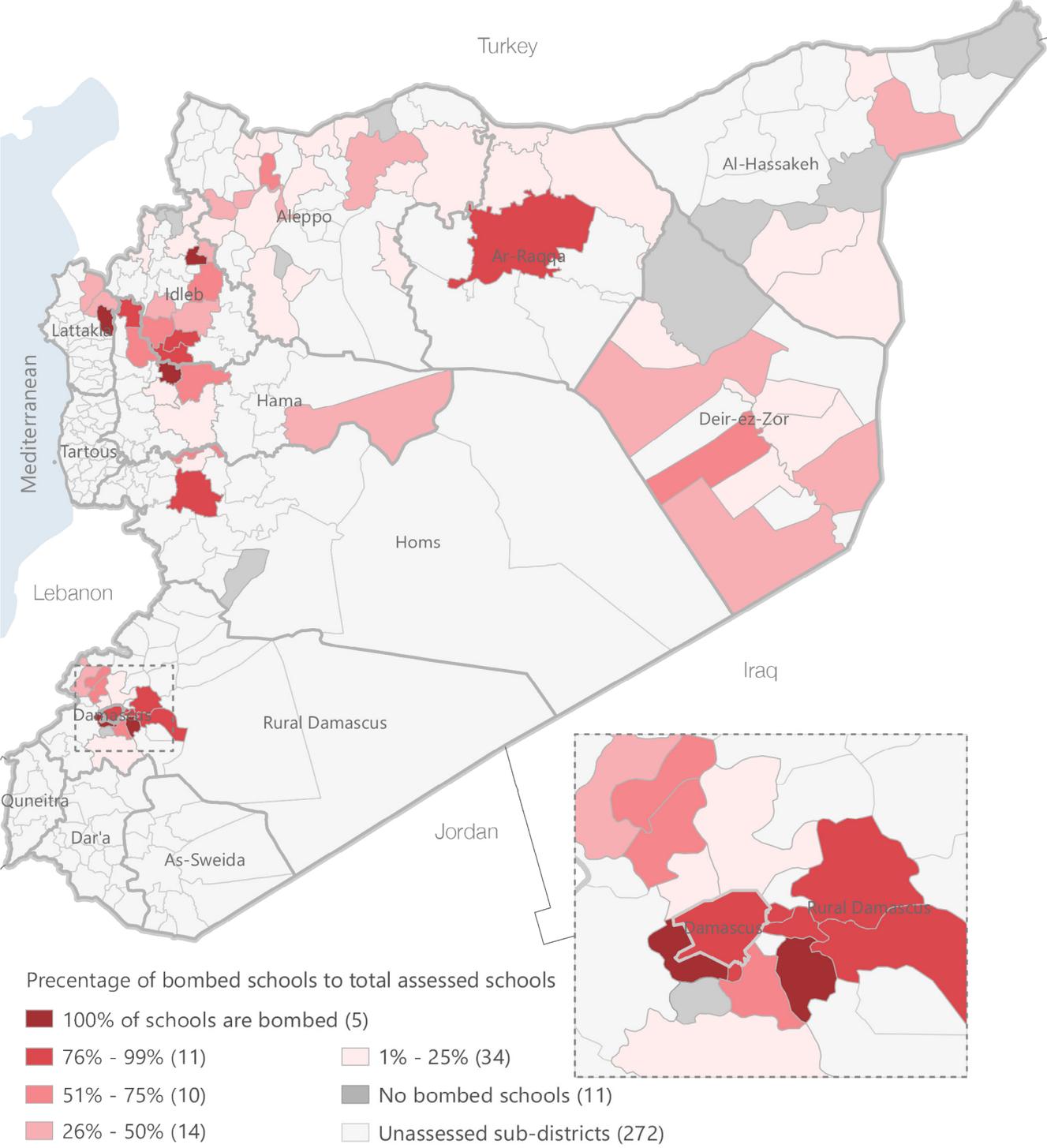


Figure 19: Assessed Sub-Districts and Percentage of Coverage
 Data from *Schools in Syria Thematic Report*

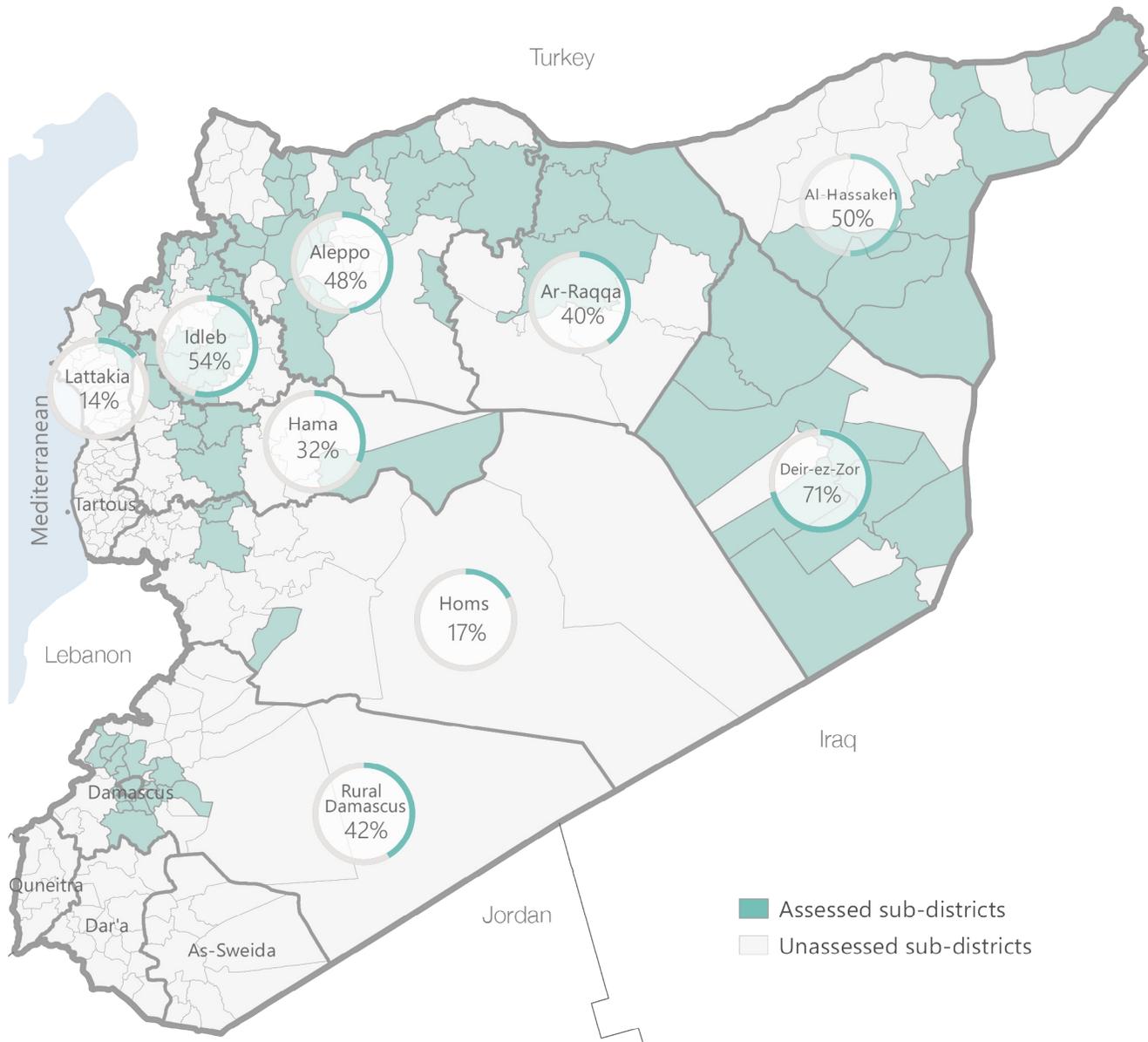


Figure 20: Functioning and Non-Functioning Schools
 Data from *Schools in Syria Thematic Report*

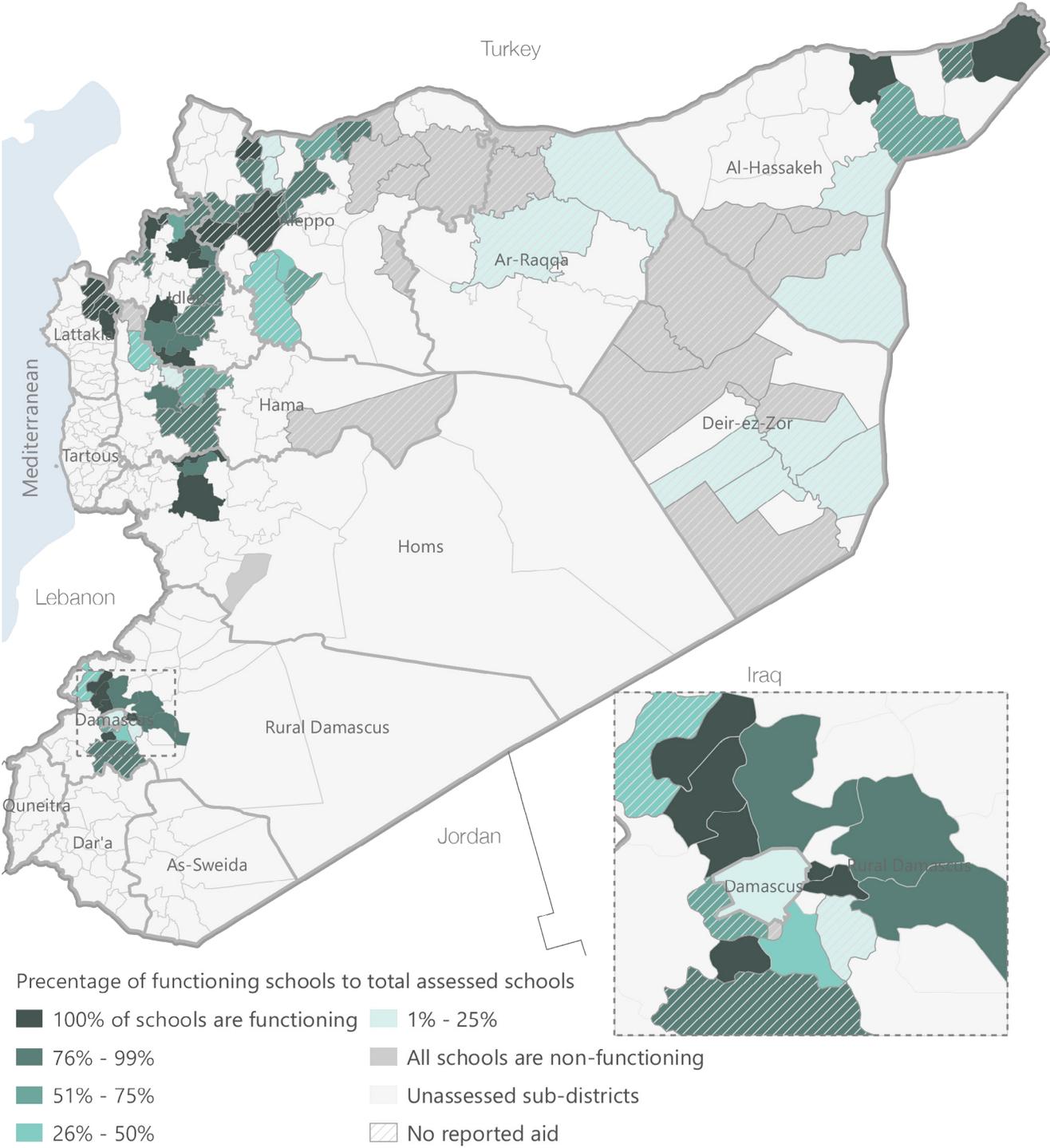


Figure 21: Number of Students
 Data from *Schools in Syria Thematic Report*

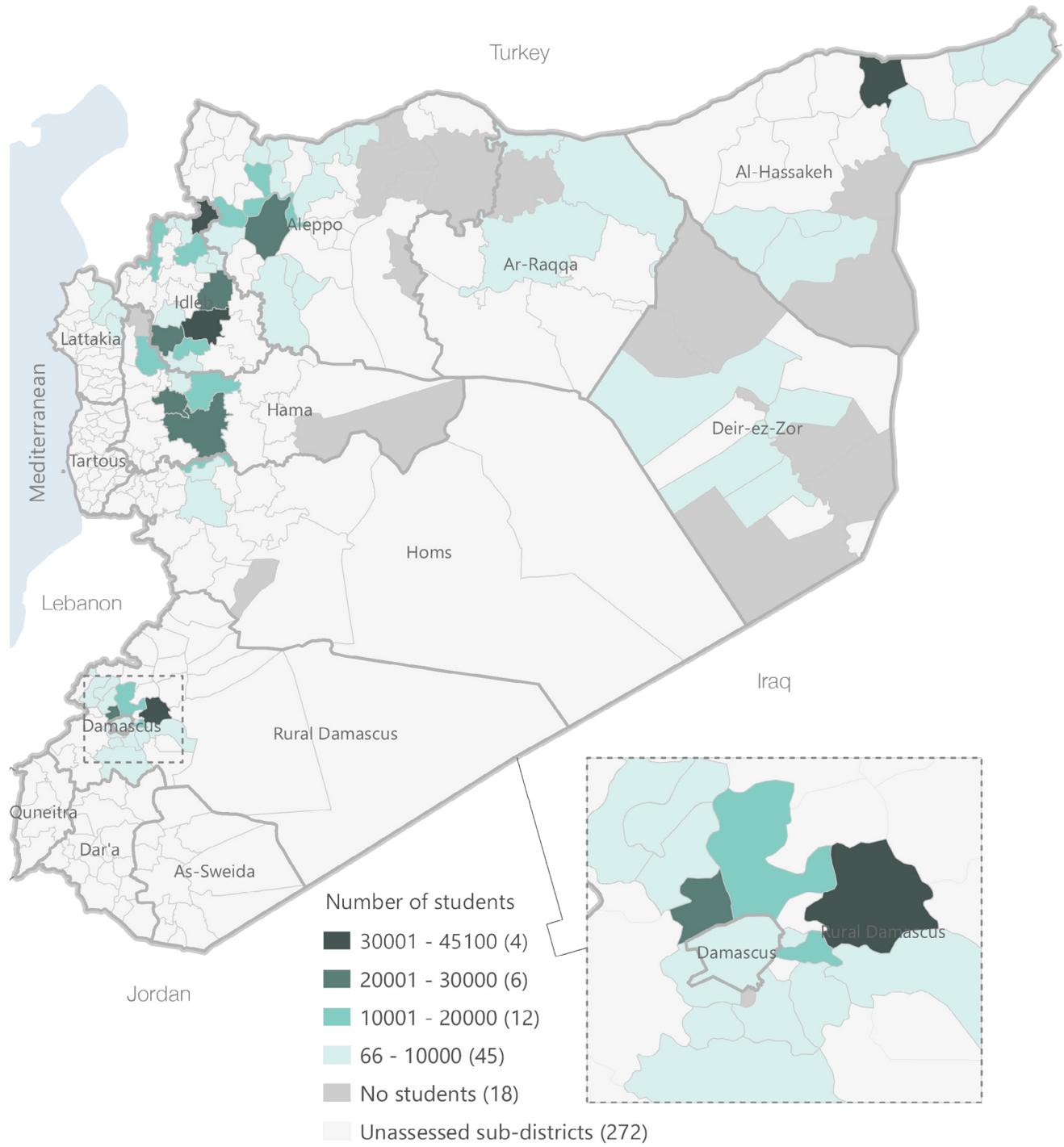




Figure 22: "Architecture that's built to heal"
https://www.ted.com/talks/michael_murphy_architecture_that_s_built_to_heal



Figure 23: "The vision of a young architect in Syria"
<http://www.cnn.com/2016/09/14/architecture/homs-syria-architect-marwa-al-sabouni/index.html>



Black clouds.
A mother crying for her son, baby, and sister. Drawing by a 13-year old Syrian girl who lost three family members. The topic for this session was dealing with loss.



"During the war a plane drops bombs on our house."
Drawing by a 10-year old Syrian boy. The topic for this session was to draw your impression of life before, during and after the war.



The artist dress a family in the snow during an art workshop in a tea garden.
The topic for this session was to draw the future you hope for.



The drawing is about the child's desire to return home to Syria. It shows the family car returning from Turkey (on the right) toward Syria.
By a student at the Friendship-Syrian school, Turkey.



A drawing by a boy who wants to be a doctor like his father in Aleppo. He wants to help the people who are dying from the rockets and bombs. The building says "clinic".
By a student at the Friendship-Syrian school, Turkey.



The drawing is about missing school and a friend (Omar) in Syria and wanting to go home.

Figure 24: "The Art of Healing: Syrian Refugee Children Express Themselves"