Problem statement

When a city becomes a prison

On the Eastern coast of the Mediterranean Sea, there lies a prison unlike any other: a whole territory, a whole people, urbanely imprisoned in a land-sea-air blockade that is consistently a target for bombing strikes in what is known to be the largest open-air prison in the entire world, the Gaza strip. Gaza’s territorial configuration and character exhibit increasingly complex hybrid and interstitial spatial responses to constant Israeli oppression strategies, which strangle one of the most densely populated territories on earth. Since 2007, Israel has imposed an airtight land, sea, and air blockade on Gaza, flagrantly violating international law by imprisoning 2.1 million people inside the Gaza Strip, thus restricting the flow of people, goods, and any other form of life.

As a result of these extreme and deliberate tactics, the very fabric of the physical and cultural context keeps mutating. With a duality of terrestrial and subterranean distortions, Gaza transforms into a perforated city with tunnels beneath, debris and destruction aboveground, and floating forms of Israeli apartheid regimes encircling the entire Gaza Strip.

Gaza’s Tissue: Land is continuously rewritten

Since the beginning of the blockade in 2007, Gaza has been destroyed four times by four major Israeli airstrikes, resulting in the massive destruction of the strip, with civilians, including children, killed and infrastructure, agriculture, and all aspects of life destroyed in a never-ending cycle of destruction. 1 With an estimate of over 2.1 million people living in 140 sq mi of land, Gaza is considered one of the most highly dense populations in the globe. Moreover, half of its population are children. UNRWA indicated in 2013 that Gaza would be an uninhabitable city by the year 2020. 2

Gaza’s urban tissue never totally heals because of the frequency of its destruction. As a result, it is always a not-yet-destroyed city. There is uncertainty in every aspect of life in the Gaza strip due to the sudden and frequent cycles of Israeli bombing. 3 As a city that is constantly

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destroyed and distorted while submerged in layers of incarceration, apartheid, and destruction, the Gaza Strip deforms and reforms slowly over time.

Resilience

When oppressive power systems are in place, there is always a counterforce. Beneath Gaza’s surface, there is a hidden layer of a network of tunnels used for the smuggling of goods, tools, and instruments. Tunnel construction beneath Gaza’s surface created voids of survival and resistance for Gazans. As Underground human activity is typically for a secondary purpose, for Gazans, it is the only option. No one can leave the borders and walls without a hard-to-get Israeli permit, even in humanitarian cases, only a few are granted an Israeli permit for therapy. Furthermore, due to the Israeli blockade, people in Gaza have no shelters and are unable to seek refuge in other countries during the war. Another form of resistance is recycling materials, which has become a crucial part of the construction industry in Gaza. After every war, Gazans recycle concrete blocks from the rubble and recycle steel bars from the buildings flattened by Israeli airstrikes.

Project Goals

1- Understanding the hybrid typologies of Israeli colonial regimes imposed in the Gaza strip in occupied Palestine and the chronology of Gaza's incarceration.
2- Dissecting layers of the spatial Israeli hegemony over Gaza in both vertical and horizontal spheres.
3- Generating infrastructural explorations that are enabling/subversive and can respond to the continuously ever-changing conditions of life in Gaza.
4- Challenging/subverting domination forces and creating forms of living/resistance that sustain life activities in the duality of Gaza’s aboveground and underground activities intervening with agriculture, water, and the city.
5- Challenging conventional design methods, especially in a deliberately constrained environment like Gaza while also creating a spatial narrative for Gaza’s contingency

4 Nicolas Pelham, “Gaza’s Tunnel Phenomenon: The Unintended Dynamics of Israel’s Siege,” Journal of Palestine Studies 41, no. 6 (July 2012).
**Design concept**

The project starts by analyzing The Gaza Strip’s urban tissue and dissecting Israel’s hybrid layers of colonial hegemony in Gaza. The project focuses on a contingency node in Gaza that will serve as a prototypical module for other locations in the Strip, intervening with agriculture, water, and the city. By investigating ways of living/unliving for Gazans within the duality of Gaza’s underground and aboveground, the project evolves into a new robust language of infrastructure that exists somewhere in the “in-between.”

The project creates a series of sectional conditions of a new form of infrastructure responding to real-life scenarios in Gaza, such as imposed destruction, siege, oppression, and apartheid. The system operates on multiple terrestrial levels (Aboveground, underground, and somewhere in the in-between), ensuring the continuity of life activities in Gaza in three scenarios, all with the ongoing Israeli Blockade. For this project, one node of intervention was chosen in the middle area to the east of Gaza, an intersection between the Al-Bureij refugee camp, the agricultural lands near the no-go zones and the Israeli apartheid wall, and the Wadi Gaza stream.

The infrastructure generates various sources of energy from different parts on various levels, some of which serve as major parts and others as backup. Furthermore, it cultivates rainwater which is filtered and stored underground for use in the living voids and the aquaponics system. The aquaponics system is underground and self-sustaining; it consists of a co-habitation of fish and plants that feed each other and can feed an entire Gazan community. The advantages of this system, particularly in Gaza, are that it can work underground on a large scale and does not require water (taking into consideration Gaza’s lack of water) or soil to function.

The infrastructure becomes a node of an active community, activating and thriving Gazan communities. It operates on all levels all year long; however, during times of Israeli aggression, people living in the Al Bureij Refugee camp (who are near the intervention node /the project’s site) can seek shelter and move below ground, and functions can also migrate to subterranean levels, allowing teaching, manufacturing, farming, and most other activities to continue below the surface of Gaza.

In a city like Gaza, where impending destruction is a fact, it requires a system that can adapt to the city’s lifecycle, therefore, the infrastructure works like operational redundancies, when some parts are destroyed, other parts continue to function instead. It works in two stages: 1- the “whole”, in which the entire structure functions as one body, and 2- the “Parts”, in which parts of the infrastructure function independently in times of emergency.
In three scenarios, the project depicts the procedural tectonics of the proposed infrastructure's functionality:

**Scenario A:** Incarceration/No airstrikes, in which the infrastructure acts as an urban battery system, with living voids, the main core, power generation, energy, water, aquaponics, and the other Gazan community life activities. The functions operate on all levels all year long (above ground, belowground, and in-between).

**Scenario B:** Incarceration+ War/Bombing strikes: The system can migrate its activities to belowground levels to ensure the continuation of life activities, and it becomes infrastructure for survival. As a result, regardless of the aboveground conditions, the system continues to operate and resist.

**Scenario C** is the final scenario, a future scenario that depicts Gazans’ resistance and determination to live. Following the war, the rubble of the destroyed parts of the infrastructure is recycled and used in the reconstruction of the damaged parts, much like how Gazans rebuild their city after each war, people recreate their destroyed city. The final scenario is, therefore, constantly written and rewritten by the people, the Gazans themselves after every Israeli aggression, leaving an open-ended scenario for the infrastructure’s future changing tectonics.

While this work does not seek to provide final or complete solutions to Gaza’s tissue, it does serve as a statement and a medium for speculating on new design approaches, especially when confronted with extreme and deliberately constrained settings. At the same time, it challenges and exposes Israel’s hybrid layers of apartheid against Palestinians and the Israeli war atrocities in the Gaza strip. This work went realistic while also providing a spatial narration for Gaza’s contingent urban conditions. The work goes, however, beyond the constraints of typical architectural interventions, particularly amidst unprecedented circumstances that necessitate new ways of thinking about architecture.
THE INCARCERATION OF A CITY: Floating structures of the “in-between”

“For those who pass it without entering, the city is one thing: it is another for those who are trapped by it and never leave. There is the city where you arrive for the first time and there is another city which you leave never to return. Each deserves a different name.”


The Gaza Strip: When a city becomes a prison

Gaza’s Urban delamination: Incarceration layers/Land-Sea-Air Blockade

The Gaza Strip Area:
141 sq Mi

Gaza population in 2021:
2,106,745 people

Source for statistics: Palestinian Central Bureau of Statistics

Imprisoners:
2.1 million Palestinians
(The city as the prison)
(65% of which are refugees)

Prison area
(The Gaza Strip)
365 sq km (141 sq Mi)
(The Gaza strip area)

Israeli Apartheid wall
40 miles long

High Risk Zone
0.4 Mile offset

NO-GO Zone
1.5 Mile offset

Sea Blockade:
Max fishing zone
(3 nautical miles from shore)
Prohibited Sea Zone

Israel (Historical Palestine)

Egypt

Sea Blockade (striped)

Tunnels

Underground

The Gaza Strip

Land blockade

Apartheid wall

The sprawling colonial infrastructure of Israeli oppression

Gaza’s Apartheid Wall

The Gaza Strip: The Largest open-air prison in the world

1

2

3

4

5

6

Israel destroyed Gaza’s only Airport in 2001

Destroyed Airport

Nahal Oz
Karni

Erez

Rafah

Kerem Shalom

Nahal Oz
Karni

Only Crossing points

Permanently Closed Crossing points

Air Siege

Land + Sea + Air Siege

Land Siege

2.1 million Palestinians
(65% of which are refugees)

Prison area
(The Gaza Strip)
365 sq km (141 sq Mi)
(The Gaza strip area)

Israel destroyed Gaza’s only Airport in 2001


Gaza after 2014
 Israeli Aggression

Living/Unliving: A new Language of infrastructure

The thesis proposes an infrastructural exploration, operating under real-life scenarios in Gaza, that shifts the ways of living/unliving for Gazans facing the monuments of siege, oppression, and collective punishment.

A "Spatial Structural interplay" intersections somewhere between the underground and the aboveground.

The result is a new format of enabling/subversive infrastructure reflected in manifestations of living/unliving conditions in the Gaza Strip on and below the surface of the earth.
Living/Unliving: Real-life Scenarios in Gaza’s context

Amid the Israeli incarceration, destruction, and apartheid imposed against Gaza, the project proposes a self-sufficient, robust infrastructure that metamorphoses and adapts with the city’s lifecycle.

Scenario A: Incarceration/No airstrikes
- Community enabling
- Urban battery system (power generation, electricity)
- Links to contingency nodes: Agriculture/water/refugee camps
  - Structures functioning above, below ground & "in-between"

Scenario B: Incarceration+ War/bombing strikes
- Explores living/unliving patterns
- Self-sustaining organism/resources for survival
- Functions migrate underground + "in-between"
  - Functionality: Below ground + "in-between"

Scenario C: Land is rewritten
- The destroyed aboveground is rebuilt
- Reconstruction out of rubble/recycling the rubble into concrete blocks. (What Gazans do after war)
  - The infrastructure’s capability to continue working regardless of the circumstances, is in line with the city’s life cycle.

The City’s life cycle: Uncertain contingencies and a cycle of repeated destruction/reconstruction

Sectional Model
Site Conditions: Sectional 3D

The 3D section A-A depicts the site location which is the intersection between Al-Bureij Refugee camp, the Wadi Gaza stream, and agricultural lands that fall in the “buffer zone” near the Israeli Apartheid Wall.

- Al-Bureij Refugee camp
- Wadi Gaza Stream
- Agricultural lands

This Node will be a prototypical module for other contingency locations in Gaza, intervening with agriculture, water, and the city. It is an intersection between:

1. Al-Bureij Refugee Camp
2. Wadi Gaza (stream)
3. The Risk “Buffer Zone”

The GAZA STRIP, Occupied Palestine

Site Intervention (4 min walk from the camp)

Site’s fabric

Wadi Gaza (stream)

Al-Bureij Palestinian Refugee camp

Rocks network

Urban Dissection of the Node

Site’s 3D Section

Contingency Node
Procedural Tectonics: The spatial narrative

Gaza’s skin

Amid the duality of Gaza’s underground, aboveground, and the “in-between”, a new layer of infrastructure emerges.

The Core

The core connects all terrestrial levels, including the underground, aboveground, and “in-between”

Functions migrate

The infrastructure responds to the ever-changing conditions of Gaza’s destruction and incarceration by working on all terrestrial layers.

Exits

Vertical circulation voids connect the various layers of the earth.
Excavated soil

The excavated earthwork will be used as a building material to construct the aboveground part of the infrastructure and enhance the “In-between” and protection.

The “In-between”

During times of aggression on Gaza, the infrastructure’s core works as a destruction buffer and its upper structure acts as a “mattress” to prevent further collapse of the core.

City’s voids

The voids of the city become a new ground for living/resistance. The infrastructure metamorphosizes with the city’s life cycle, with functions and activities migrating to underground in contingencies.

Resistance

After the war, the rubble gets recycled and used in the reconstruction process, much like how Gazans rebuild their city. People recreate the destroyed parts of the infrastructure, leaving an open-ended scenario for the infrastructure’s future changing tectonics.
Infrastructure: Multi-terrestrial activities

1. Agriculture/planting
2. Teaching/learning/vocational
3. Solar Energy production
4. Rainwater harvesting
5. Farming/animals
6. Core
7. Seed Bank
8. Oxygen pipes
9. Underground path from the Al-Burej Refugee camp
10. Planning/communication
11. Living voids/resistance
12. Waste
13. Existing Tunnel (assumed)
14. Manufacturing/recycling
15. Energy batteries storage
16. Making/tools/recycling
17. Aquaponics/food production
18. Bio-waste
19. Geothermal Energy
Living/Unliving: A self-sustaining organism

Scenario A

Plants absorb the nutrients and oxygenate the water for the fish

Aquaponics

Fish

Fish produces waste

Microbes & worms

Convert waste to nutrient-rich water that feeds the plants

Aquaponics

Seed Bank

Seeds supply for underground aquaponics

Solar cells

Energy for Aquaponics

Energy storage below ground

Water supply for aquaponics

Rainwater cultivation

LED lighting for living voids

Electricity supply for living voids

Bio waste

Returns to aboveground agriculture (as fertilizers)

Irrigation for aboveground agriculture
Living/Unliving: A robust Infrastructure

- Israeli Settlements withdrawal from Gaza
- Full land, sea, and air blockade on Gaza
- Bombing Gaza becomes more violent.

Time pace of Israeli strikes on Gaza since its full blockade in 2007

Scenario B

Gaza’s skin

Cracks

Strata

Future

2005

2006

2008-2009

Israeli Bombing of Gaza
(27 Dec. 2008-10 Jan 2009)

2012

2014

Israeli Bombing of Gaza
(8 July-26 August)

2021

Israeli Bombing of Gaza (10 May-21 May)
Future Scenario: Land is rewritten