RAPTURED

A BURIAL COMPLEX FOR THE EVACUEES OF PRIPYAT

Wynand Viljoen
2008029446

Department of Architecture,
University of the Free State.

2 October 2013

This dissertation is submitted in partial fulfilment of the requirements for the degree Magister in Architecture (Professional) at the University of the Free State. Unless stated otherwise the research in this document is entirely my own work.

ABSTRACT

The paranormal nature of a rapture has been the catalyst of mysterious ideas and speculations for ages. Often forgotten is the psychological trauma that such an event will impose upon a community and also a landscape. This is especially true for instances where individuals are taken against their will, thus ripped from the daily milieu that define their identity.

The name 'Chernobyl' would forever be clouded in mystery and be synonymous with a wide scale rapture. The nearby town, Pripyat, stands today as a ghost town remembering not only the power of the atom, but also an urban time capsule of the utopian life that was lived there. Today, this strong modernist town is only inhabited by a deafening silence, juxtaposed against the rhythmic clicking of the Geiger counter by your side.

Radioactivity has been stereotyped over years as the 'invisible enemy'. It is this characteristic that terrorizes and breaks down not only the physical body, but also the psyche of a human being. Being terrorized by a force invisible to the human eye leads to an elevated level of traumatization, scarring the body not only on a visible, but also deeper invisible level.

There exists a current conflict amongst the former individuals of the town in that they clearly utopianize their life in Pripyat, but at the same time there is the lingering memory of that fateful day in April that ripped them from this utopian town. Furthermore, Pripyat still exists today with no apparent visual scarring. Thus the utopian nostalgia is juxtaposed against the fact that the town is visually and psychologically still in tact, but physically uninhabitable.

Recently, the Exclusion Zone or "Zone of Alienation" has been opened to tourists and former inhabitants for brief periods of time. The site is limited to day visits only, with strict prohibitions enforced by the military on overnight stays.

This thesis aims to insert a cemetorial *place* into the town of Pripyat, in order to ignite discourse on placemaking for death in a raptured landscape.



CHAPTER 1. PROLOGUE **10**

1.1 INTRODUCTION 12

1.2 PROBLEM STATEMENT 14

CHAPTER 2. EVENT & EFFECT **16**

2.1 THE HAPPENING 18

2.2 EVACUATION 20

2.3 THE ZONE 22

2.4 STATUS QUO 24

2.5 RADIOACTIVE EARTH 28

CHAPTER 3. CONTEXT **32**

3.1 PRIPYAT 34

3.2 SCALE IN THE LANDSCAPE 44

3.3 BROAD CONTEXT MODEL 46

3.4 SITE SELECTION 48

3.5 SITE ANALYSIS 52

CHAPTER 4. THEORETICAL DISCOURSE **66**

4.1 PARANORMAL CONTEXT 68

4.2 RAPTURED 70

4.3 DICHOTOMOUS MAGICAL BEING 72

4.4 SPLITLINE OF CONTAMINATION 76

4.5 THEORETICAL DISCOURSE 80

CHAPTER 5. PRECEDENT STUDIES **82**

5.1 PRECEDENTS OF TYPE 84

5.2 PRECEDENT OF LANDSCAPE REACTION 92



CHAPTER 6. BRAIN WORK 100

6.1 INSPIRATION ON SITE 102
6.2 MATERIAL DECAY 104
6.3 TOUCHSTONE 106
6.4 MACABRE TECTONICS 108
6.5 ABSTRACTED UMBRELLA 110
6.6 SKETCH PROCESS 112
6.7 DESIGN MODELS 126
6.8 COLLAGE DESIGN METHOD 130
6.9 REFINED SKETCHES 132
6.10 REFINED MODELS 136
6.11 BRAIN WORK RESULT 138

CHAPTER 7. DESIGN DISCOURSE 140

7.1 ESSENCE OF THE BUILDING 142
7.2 ADDRESSING THEORY THROUGH DESIGN 144
7.3 SITE PLAN 146
7.4 MAIN CIRCULATION 152
7.5 AREA OF FOCUS 156
7.6 MAIN ENTRANCE HALL 160
7.7 BURIAL HALLS 168
7.8 MOTILE SYSTEMS 188
7.9 CHAMBER OF SECRECY 192
7.10 MAGICAL PORTAL 194

CHAPTER 8. REFLECTION 198

CHAPTER 9. TECHNICAL REPORT 202

HELICOPTER CONSTRUCTION METHOD 204

Version: 27/09/13



REFERENCES 222

APPENDIX: MAPPING THE CHERNOBYL NARRATIVE 230



INDEX




“ We didn’t just lose a town, we lost our whole lives”
(Alexievich, 2006: 32)





1

PROLOGUE | Пролог


"People said goodbye to their homes like they were people."
– Soldier (Alexievich, 2006: 36)

1.1 INTRODUCTION

50 000 People were evacuated from their homes in the Ukraine in a matter of hours on 27 April 1986. The worst nuclear disaster has taken place 24 hours earlier at the Chernobyl Nuclear Power Plant, and the world officially had its first nuclear refugees.

The effects of such a disaster is far reaching not only geographically but psychologically as well. Multiple layers of complexity arise and mutate in such a context, leading to reinterpretations and re-perceptions of a landscape. It is well known that man connects value to *place*. They develop spiritual connections to earth, soil and landscape, but little is known about what connection man makes to a landscape that he has been raptured from. The question exists on how we understand *spirit of place* in a zone that now exists in the realm of otherworldliness, a landscape turned paranormal literally overnight, a Zone of Alienation.

This paranormal landscape does not call for a realistic architectural solution. Placemaking should happen in the same abstract realm that this landscape exists in. Critical making of place in a landscape without human life will be explored through this thesis. This thesis does not aim to provide an answer to the previously mentioned, but rather evoke discourse on the matter through experimental and speculative spaces and tectonic expression.

The most powerful force known to man is death, and through this *force* this thesis aims to reunite man with his beloved landscape. Man will again belong to this landscape, but he will do so in death. His remains will become one with the landscape and she will dwell with her people again.



Figure 1.1: Kindergarten in Pripyat.



1.2 PROBLEM STATEMENT

The uprooting of a community is always a traumatic event, especially if that uprooting is done in a very short amount of time and against their will (Figure 1.2 & 1.3). What made the uprooting of Pripyat and surrounding villages so traumatic, was the fact that an invisible enemy, namely radiation, was present. This *force* terrorized the people with its combination of invisibility and horrifying stigmatization.

The identities of the previous inhabitants suffered a rapture when they were evacuated from Pripyat, leaving behind the artefacts of their identity in a place of alienation. These individuals are thus in a constant state of *displacement* as these artefacts of their identity still continues as place in their memory, but in absence of humans in reality.

Furthermore there exists an idea of infiniteness when Chernobyl, Pripyat and its people are mentioned. Radioactivity and its effects on the landscape are measured in centuries which gives way to the perception of infiniteness in relation to a human life span. In fact, radioactivity is *temporal*, but just out of the time frame of human perception.



Figure 1.2: Evacuation from Yanov Station near Pripyat (Chernobyl Foundation, 2012: online).



Figure 1.3: Evacuation from Pripyat
(Chernobyl Foundation, 2012: online).

2

EVENT & EFFECT | Подія і ефект





"I didn't see the explosion itself. Just the flames. Everything was radiant. The whole sky. A tall flame. And smoke. The heat was awful. And he's still not back."

- Lyudmilla Ignatenko, wife of deceased fireman Vasily Ignatenko (Alexievich, 2006: 5)

2.1 THE HAPPENING

On the morning of the 26th of April 1986, tests were conducted at the Chernobyl Nuclear Power Plant that could have resulted in more efficient generating of electrical power. Runaway fission processes, coupled with a lack of cooling in the reactor, caused two catastrophic explosions mere seconds apart, destroying Reactor number 4 at the Chernobyl Nuclear Power Plant (Medvedev, 2011: 31-33).

The explosion ripped open the roof of the reactor hall and ejected highly radioactive material into the atmosphere (Figure 2.1 & 2.2). Over the next few days, the reactor will continue to pour radioactive material into the air which will be carried over Europe to as far as the United Kingdom (The battle of Chernobyl, 2006: documentary).

Fire stations from regions around the reactor rushed to the blazing reactor without knowledge of the astronomically high levels of radioactivity on the site. The first responders suffered fatal doses of radiation and were admitted to the Pripyat hospital (Alexievich, 2006: 6). They were later transferred to Moscow where they could receive specialist treatment for radiation poisoning. All of these patients succumbed to radiation poisoning within 14 days (The battle of Chernobyl, 2006: documentary).

In relation to the scale of the accident, the official death toll caused by the accident is relatively low. The fatalities caused by either the explosion or radiation poisoning officially stands at 31 (Medvedev, 2011: 129), mostly made up of plant workers and firemen (Alexievich, 2006: ix).

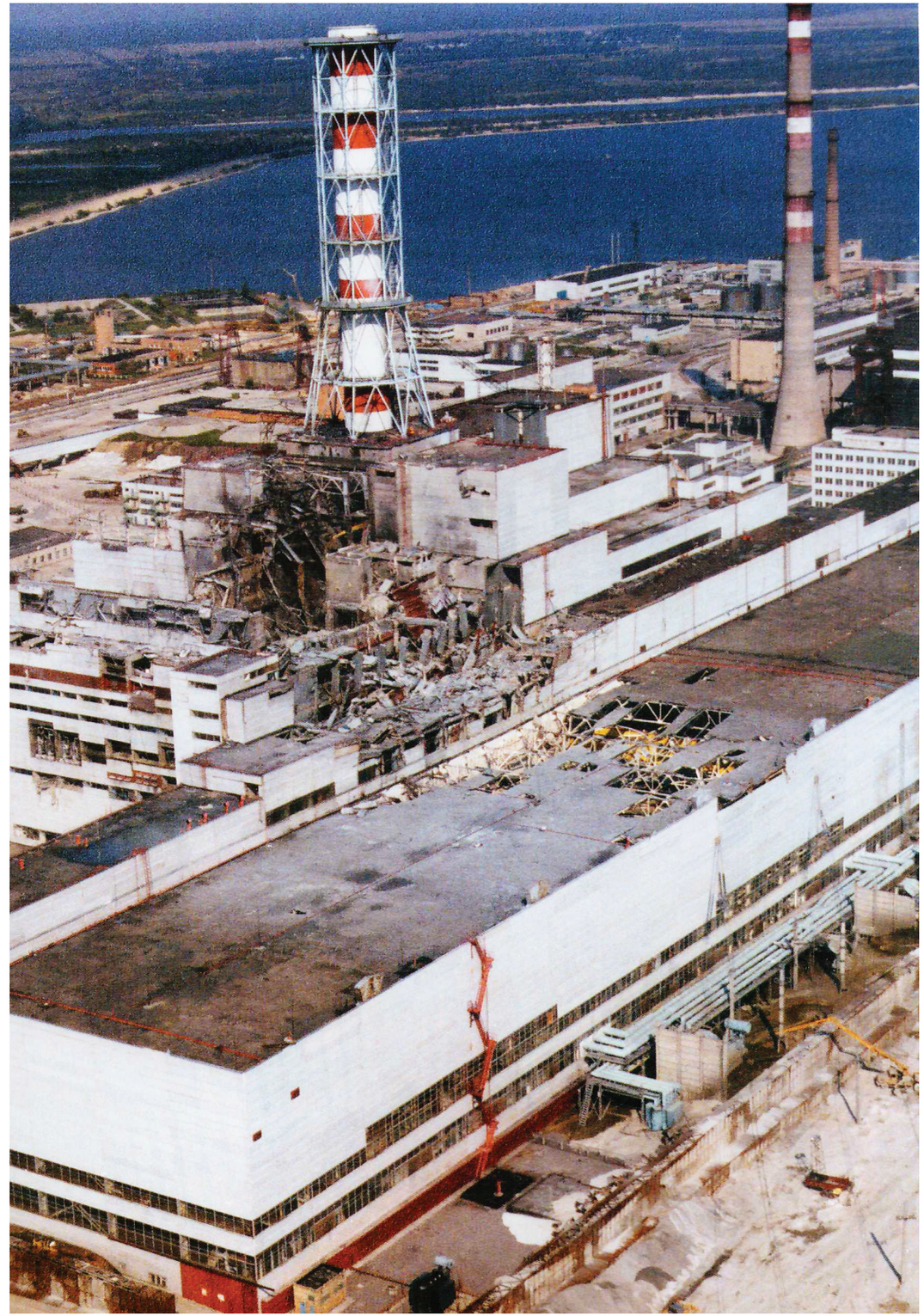
31

Official death toll of the Chernobyl disaster (Medvedev, 2011: 129).

Opposite page (left):
Figure 2.1: Close up photo of destroyed Reactor 4 (Lyabakh, 1996: 2).

Opposite page (right):
Figure 2.2: Aerial photo of destroyed Reactor 4 (Lyabakh, 1996: 25).





2.2 EVACUATION

At 14:00 on the 27th of April 1986, the order was given to evacuate the nearby town of Pripyat due to abnormally high levels of radiation. The 50 000 inhabitants were evacuated in just over *two hours* with more than 1 000 busses. Evacuees were not always accepted with open arms, as there weren't space for 50 000 extra people in the neighbouring villages. During the evacuation, many children were separated from their parents and throughout villages there were lists of parents and children looking for each other (Medvedev, 2011: 145 -147).

Today there is no formal publication as to where exactly all the inhabitants went. It would appear that people who are still employed at the (now decommissioning) power plant resides in a nearby town called Slavutych. This town only consists of 19 500 inhabitants which are old enough to have been inhabitants in Pripyat (Daycard-Heid, 2006: online).

Contrary to popular belief, the town permanently evacuated after the disaster is named Pripyat. Chernobyl is the name of the nuclear power plant, named after the nearby town which was not permanently evacuated.

2
HOURS

Time it took to evacuate a town of 50 000 inhabitants (Medvedev, 2011: 145-147).

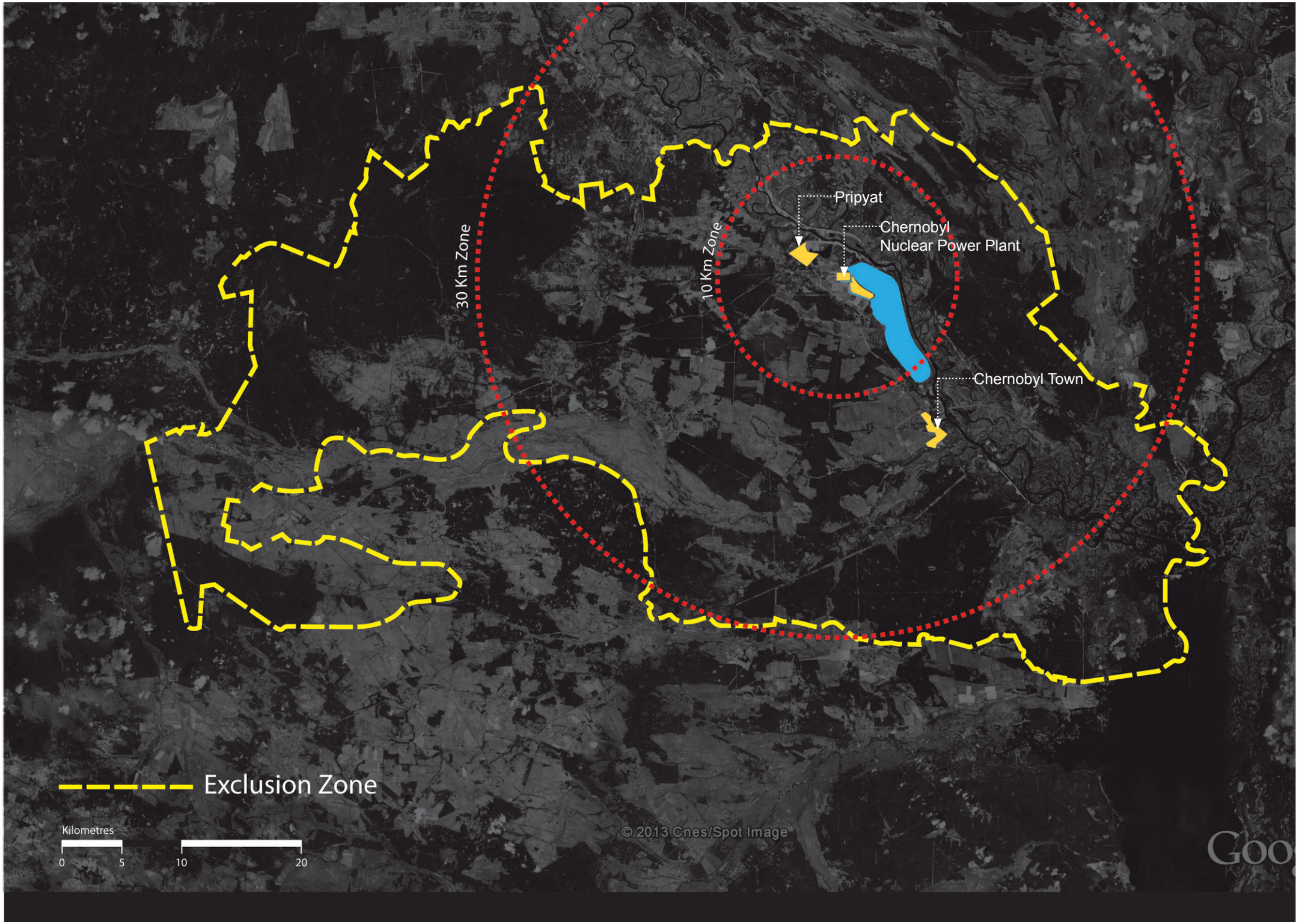
Opposite page:
Figure 2.3: Abandoned kindergarten classroom.



2.3 THE ZONE

During the first few days following the disaster a 10 km radius of contamination was implemented around the reactor site. Later, upon realising the effect of the disaster this 10 km zone was expanded to 30 km. These zones weren't scientifically calculated and were only implemented as immediate disaster areas for evacuation. The arbitrary 10km and 30km zones were then later changed to a more formal exclusion zone (indicated in yellow on opposite page) based on actual radioactive levels in the specific areas. Today it is formally called the Exclusion Zone or Zone of Alienation, but locally known only as The Zone (Pashchenko, H., 2012: personal communication).

Opposite page:
Figure 2.4: Map of the initial and current Exclusion Zone. Derived from photographs taken of maps during visit to Exclusion Zone and Google Maps (2013a: online).


30 Km Zone
10 Km Zone
Pripyat
Chernobyl
Nuclear Power Plant
Chernobyl Town
Exclusion Zone
Kilometres
0
5
10
20
© 2013 Cnes/Spot Image

2.4 STATUS QUO

Today the town of Pripyat stands as a monument to the power of the atom. The Exclusion Zone is under military guard and entrance to the zone should be cleared with relevant authorities at least 11 days in advance. Entrance is only granted under supervision of a government appointed guide. Passports should always be presented when entering the zone, even if the person entering is a Ukrainian citizen. This enforces the idea that this place is removed from its people and reality on both a physical and cognitive level.

During Ukrainian holidays the Exclusion Zone is opened freely for previous inhabitants of the area to pay respect to loved ones buried there before the accident. Previous inhabitants do make use of these holidays and the Exclusion Zone do tend to be very busy during the holidays (Pashchenko, H., 2013: personal communication).

Radiation poisoning is still a real threat in the Exclusion Zone and thus the reason for qualified guides equipped with Geiger counters. These enable the guides to constantly monitor radiation levels and keep visitors out of ‘hotspots’. No person are to enter the Exclusion Zone without an appointed guide, and no person are to be out of visual sight of a guide at any time during visiting the zone. Radiation scans are done at military checkpoints five and ten kilometres from the reactor. The military have the right to confiscate any clothing that are showing elevated levels of radiation, thus the reason the guides prohibit anyone from kneeling down to take photos in order to limit exposure to the ground. *It’s better to lose your shoes than your pants*.

Opposite Page:
Figure 2.5: Hotel Polissya in Pripyat.





Figure 2.6: Reactor 4 today.

Opposite Page:
Figure 2.7: Reactor 4 today close up.







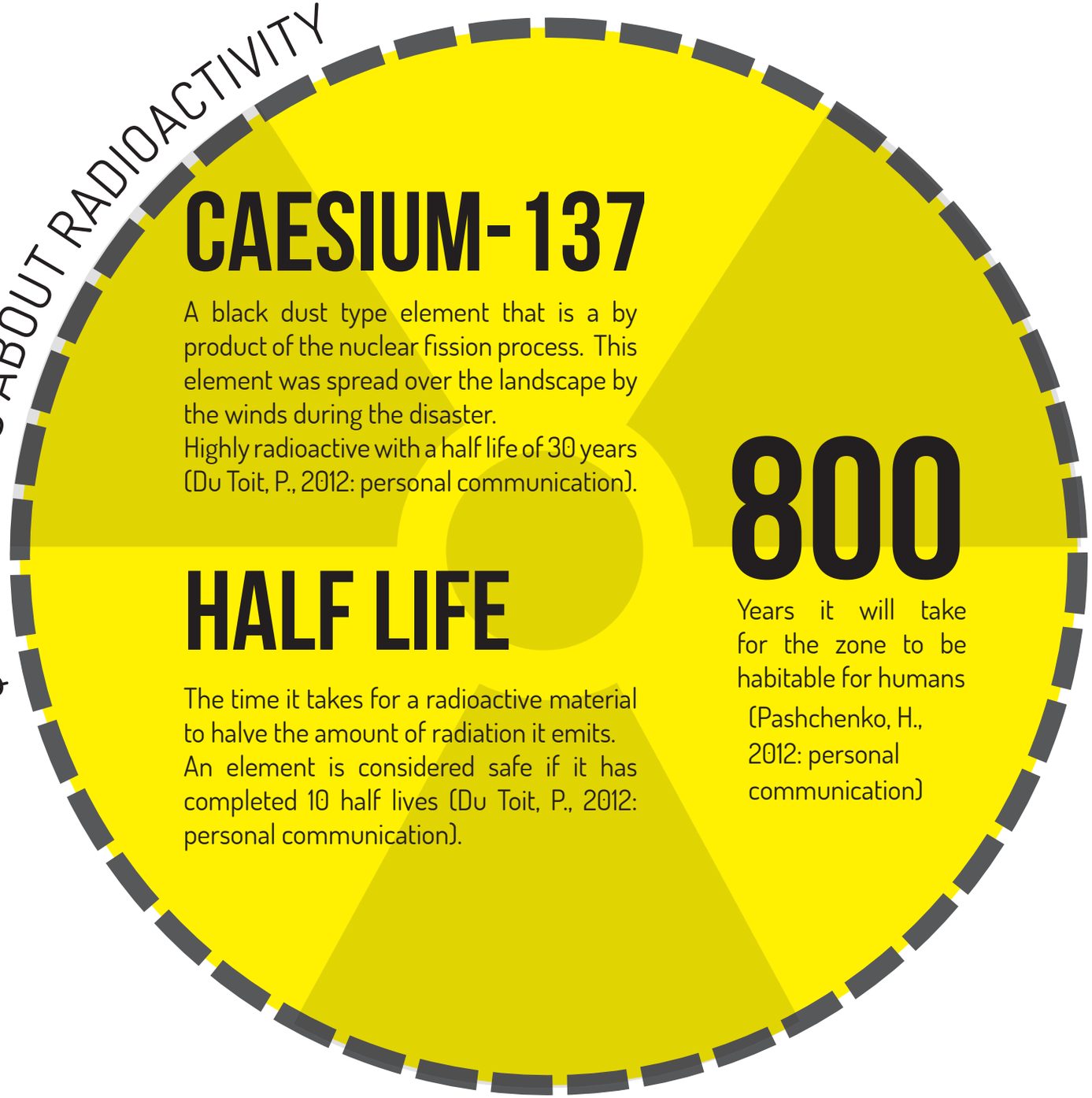
2.5 RADIOACTIVE EARTH

The main polemic of the site would be the fact that it is radioactive. This issue is a danger for humans being exposed to the radioactivity for extended periods of time, thus the reason for evacuation of the town. Currently there are people working in the Exclusion Zone and they are closely monitored for high levels of radiation. Furthermore they are only allowed to work in the Exclusion Zone for two weeks at a time, and then take a compulsory two week recess. There are currently also guided visits allowed in the Exclusion Zone and up to date no visitors have received dangerous doses of radiation. Thus, as long as a person on site does not stay there for longer than two weeks, they have a significantly small chance of contracting radioactive poisoning (Pashchenko, H., 2012: personal communication).

Building in a radioactive environment such as Pripyat does present itself with a set of challenges, but these challenges can be overcome if the designer adheres to the rules of radiation. In an interview with nuclear medicine specialist, Pieter Du Toit (2012: personal communication), he explained how radiation affects a human and a landscape. Du Toit communicated that to limit your exposure to radioactivity you should limit the *time* you are exposed, increase your *distance* from the radioactive material, or insert a *suitable barrier* between yourself and the radioactive material.

Opposite Page:
Figure 2.8: Infographic on radioactivity.

QUICK FACTS ABOUT RADIOACTIVITY



CAESIUM-137

A black dust type element that is a by product of the nuclear fission process. This element was spread over the landscape by the winds during the disaster.
Highly radioactive with a half life of 30 years (Du Toit, P., 2012: personal communication).

HALF LIFE

The time it takes for a radioactive material to halve the amount of radiation it emits.
An element is considered safe if it has completed 10 half lives (Du Toit, P., 2012: personal communication).

800

Years it will take for the zone to be habitable for humans (Pashchenko, H., 2012: personal communication)

Currently, in Pripyat, the radiation comes from the ground and thus, should you *limit or eliminate* your contact and *distance* from the ground level you can greatly reduce the risk of radiation exposure (Figure 2.7 & 2.8). Furthermore, it should be noted that radiation cannot be inhaled in the Exclusion Zone like an airborne virus. The radioactive dose decreases exponentially as a person increases their distance from the ground plane (Du Toit, P., 2012: personal communication).

Should a person want to create a *barrier* between himself and the radiation, a suitable material and thickness should be used. Du Toit (2012: personal communication) noted that for the radioactivity in Pripyat, a 200mm solid concrete wall would suffice.

In conclusion, it is very possible to create clean spaces in a radioactive landscape as long as the designer keep in mind the three rules of radioactivity, namely *distance, time and suitable barrier.*

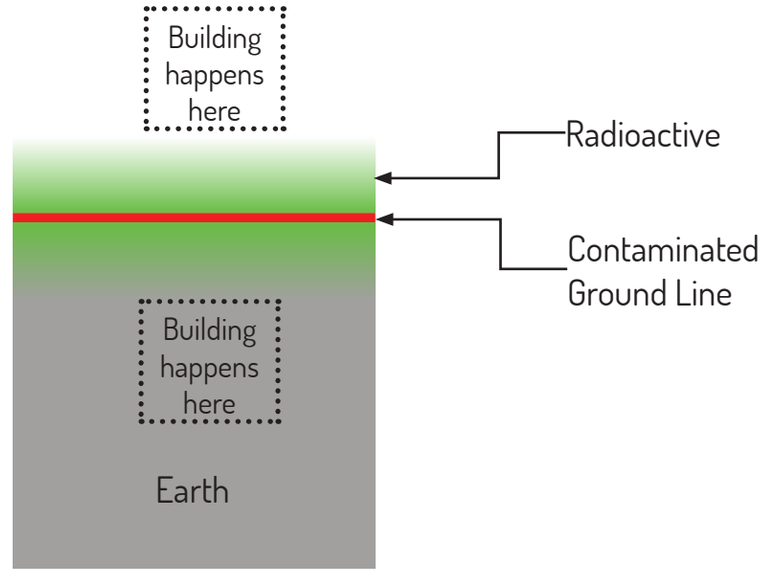
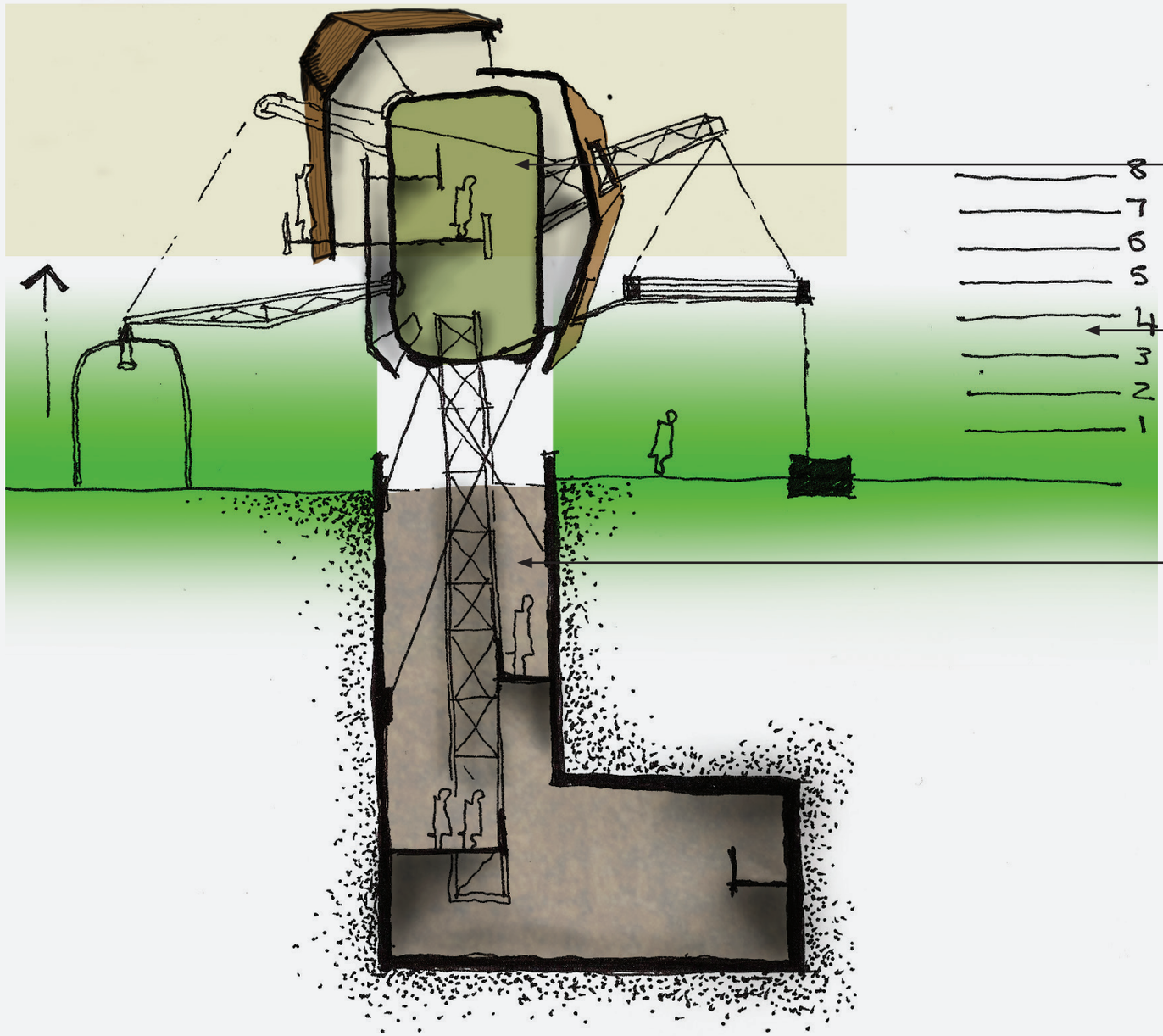


Figure 2.9: Diagram depicting the radiation on the ground level as described by Du Toit (2012: personal communication).

Opposite Page:
Figure 2.10: Sketch depicting the rules of radiation relating to a building.



Creating a clean pocket above a radioactive landscape.

Radioactivity decrease exponentially with increased distance from ground level.

Creating a clean pocket inside a radioactive landscape.

3

CONTEXT | контекст




“The old women would come and cry...They cried over their poisoned land.”
– Soldier (Alexievich, 2006: 37)

3.1 PRIPYAT

The town of Pripyat is located in the North of Ukraine and was established in 1970 to house the workers of the Chernobyl Nuclear Power Plant. Pripyat is located on the banks of the Pripyat river, and is also where the name originated from (Leontiev, 2011: online). The town is located 3.3 kilometres northwest from the power plant and 114 kilometres north from Kyiv, the capital of the Ukraine (refer to Figure 3.1 on opposite page).

The town was seen as the model Soviet town and it was considered a privilege to live in Pripyat. Inhabitants were also selected to live in Pripyat, as the town was not merely open for anyone to move into (Pashchenko, H., 2012: personal communication). The town grew very fast due to the rapid expansion of the Chernobyl Nuclear Power Plant and served as the Soviet utopian dream for 50 000 people by 1986 (Medvedev, 2011:145).

Pripyat was laid out in a strict modernist way (Figure 3.4), with ring roads encircling geometric districts and vast open spaces between buildings, all arranged around a central town square. Further addressing the modernist town planning is the concept of designing the town with the idea of promoting traffic flow and eliminating traffic jams (Leontiev, 2011: online). This modernist layout, coupled with the ring roads around districts, most probably resulted in the fast and efficient evacuation of the 50 000 inhabitants in merely two hours.

Kyiv or Kiev?

Pronounced Key-jev, the spelling of the capital of Ukraine can be used as either versions. There exists little formal information about the preferred academic spelling and for the purpose of this thesis Kyiv will be used in text.

Opposite page:
Figure 3.1: Location of Pripyat in Ukraine (Rand Mcnally, 2013: online).


BELARUS
RUSSIA
POLAND
Chernihiv
Chornobyl'
Sumy
Rivne
Kiev
Zhytomyr
L'viv
Kharkiv
GALICIA
Kremenchug Reservoir
Ternopil'
Poltava
Khmel'nyts'kyi
Kremenchuk
VAKIA
Vinnytsia
Kramators'k
Luhans'k
UKRAINE
Dnieper
Prut
Dniester
Kirovohrad
Dnipropetrovs'k
Donets'k
NGARY
Chernivtsi
Pervomais'k
Zaporizhzhia
Kryvyi Rih
Mariupol'
CARPATHIAN MOUNTAINS
MOLDOVA
Mykolaïv
Odesa
Sea of Azov
Kerch
Black Sea
CRIMEAN PENINSULA
Simferopol'
ROMANIA
Sevastopol'
Yalta
N
W
E
S
50
100 miles
60
120 km.
RAND McNALLY

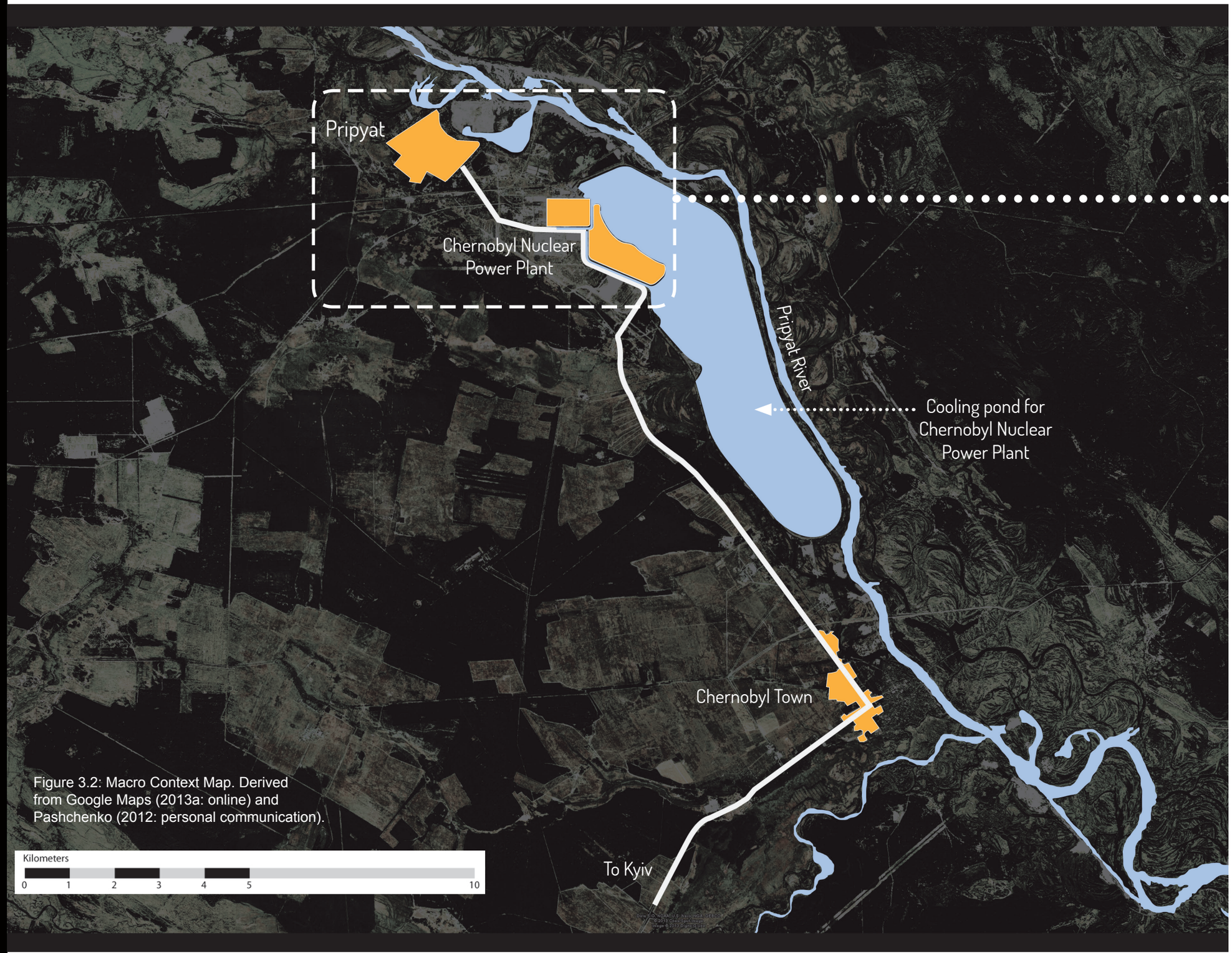


Figure 3.2: Macro Context Map. Derived from Google Maps (2013a: online) and Pashchenko (2012: personal communication).



Figure 3.3: Pripyat in relation to Chernobyl Nuclear Power Plant. Derived from Google Maps (2013a: online) and Pashchenko (2012: personal communication).



Figure 3.4: Pripyat town plan. Derived from Google Maps (2013a: online).



Figure 3.5: Aerial view of Pripyat as it stands today (Tricon Films & Television, 2010: online).

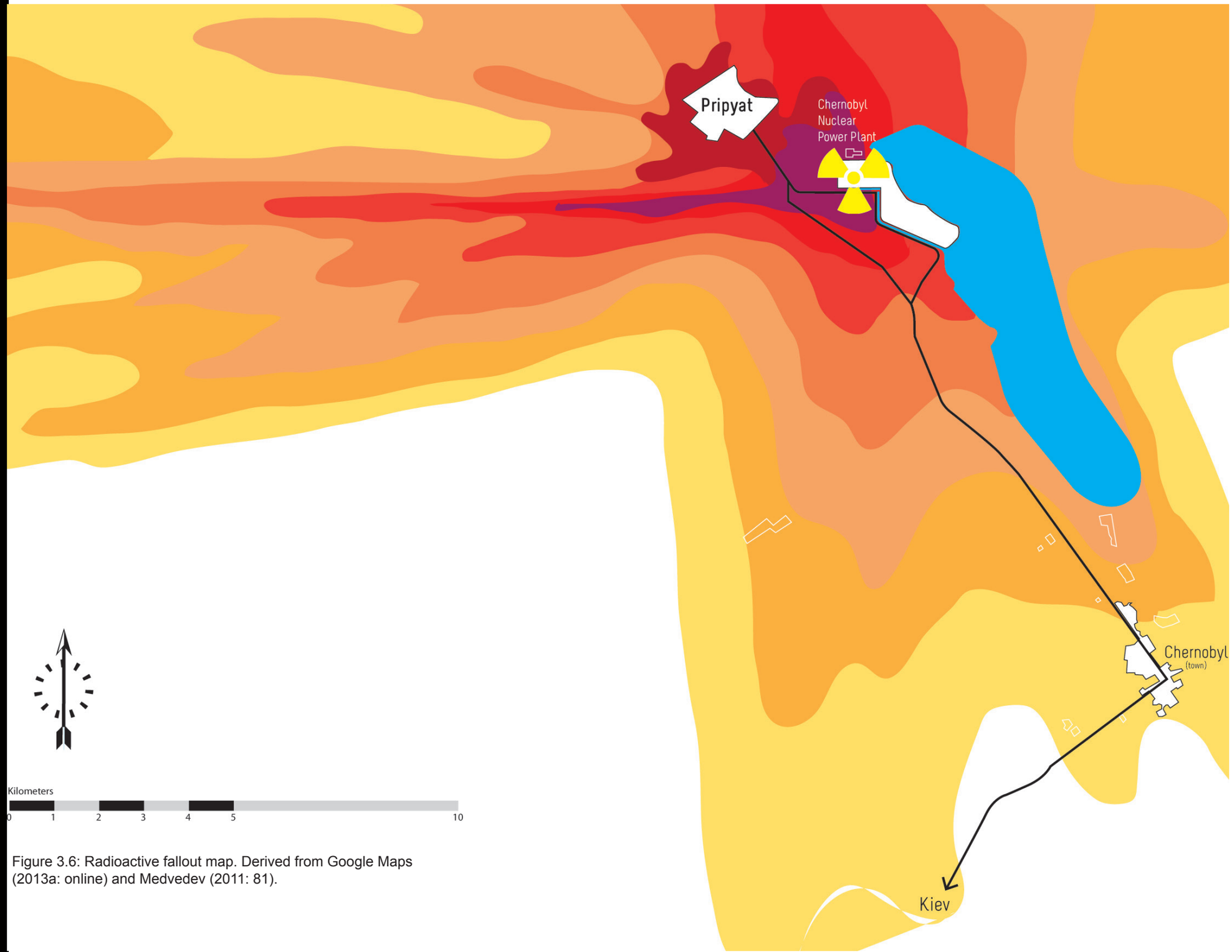


Figure 3.6: Radioactive fallout map. Derived from Google Maps (2013a: online) and Medvedev (2011: 81).



Figure 3.7: Radiation warning sign next to the road.



Figure 3.8: Pripyat town entrance.



Figure 3.9: Lenin Square.

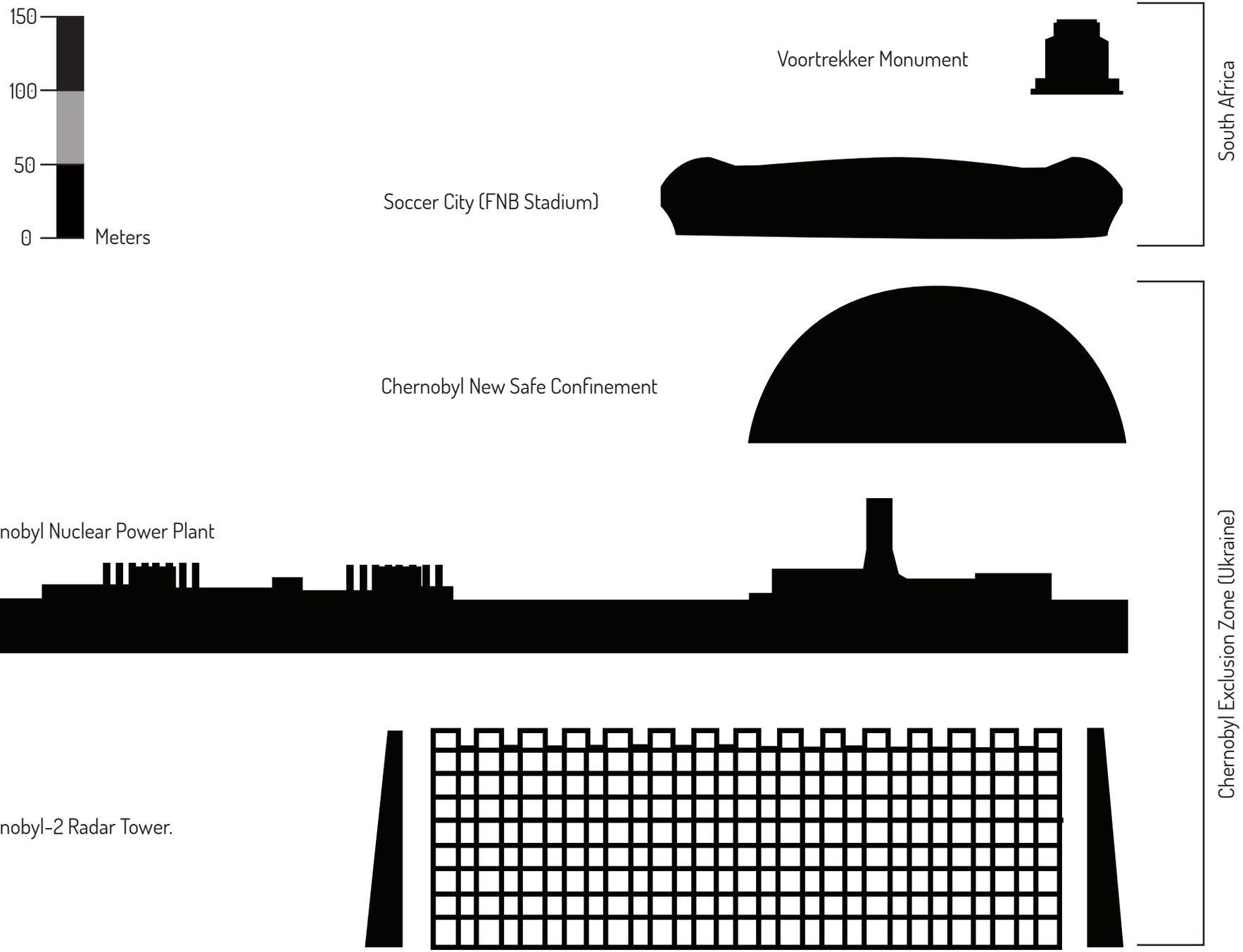
3.2 SCALE IN THE LANDSCAPE

Upon visiting the exclusion zone the author experienced a phenomena that can rarely be communicated with photographs, namely, the monumentality of scale in the Exclusion Zone.

In order to communicate the scale to the reader of this thesis, the author compared well known South African buildings to buildings found in the Exclusion Zone (Figure 3.10).

The monumentality of the buildings in the landscape, combined with the vast open spaces found in the modernist layout of Pripyat, results in the dwarfing of any building that does not address the scale in the landscape.

Opposite page:
Figure 3.10: Scale Comparison in the Landscape (Google Maps, 2013a,b,c,d: online).
Building heights derived from within Google Earth software with above referenced locations.


150
100
50
0
Meters
Voortrekker Monument
Soccer City (FNB Stadium)
South Africa
Chernobyl New Safe Confinement
Chernobyl Nuclear Power Plant
Chernobyl-2 Radar Tower.
Chernobyl Exclusion Zone (Ukraine)

3.3 BROAD CONTEXT MODEL

A 1:5000 broad context model was built to understand the relationship that exists between Pripyat and the Chernobyl Nuclear Power Plant (Figure 3.11 & 3.12). Specifically referencing scale in the landscape, the model manifested this phenomena in tactile three dimensional space.

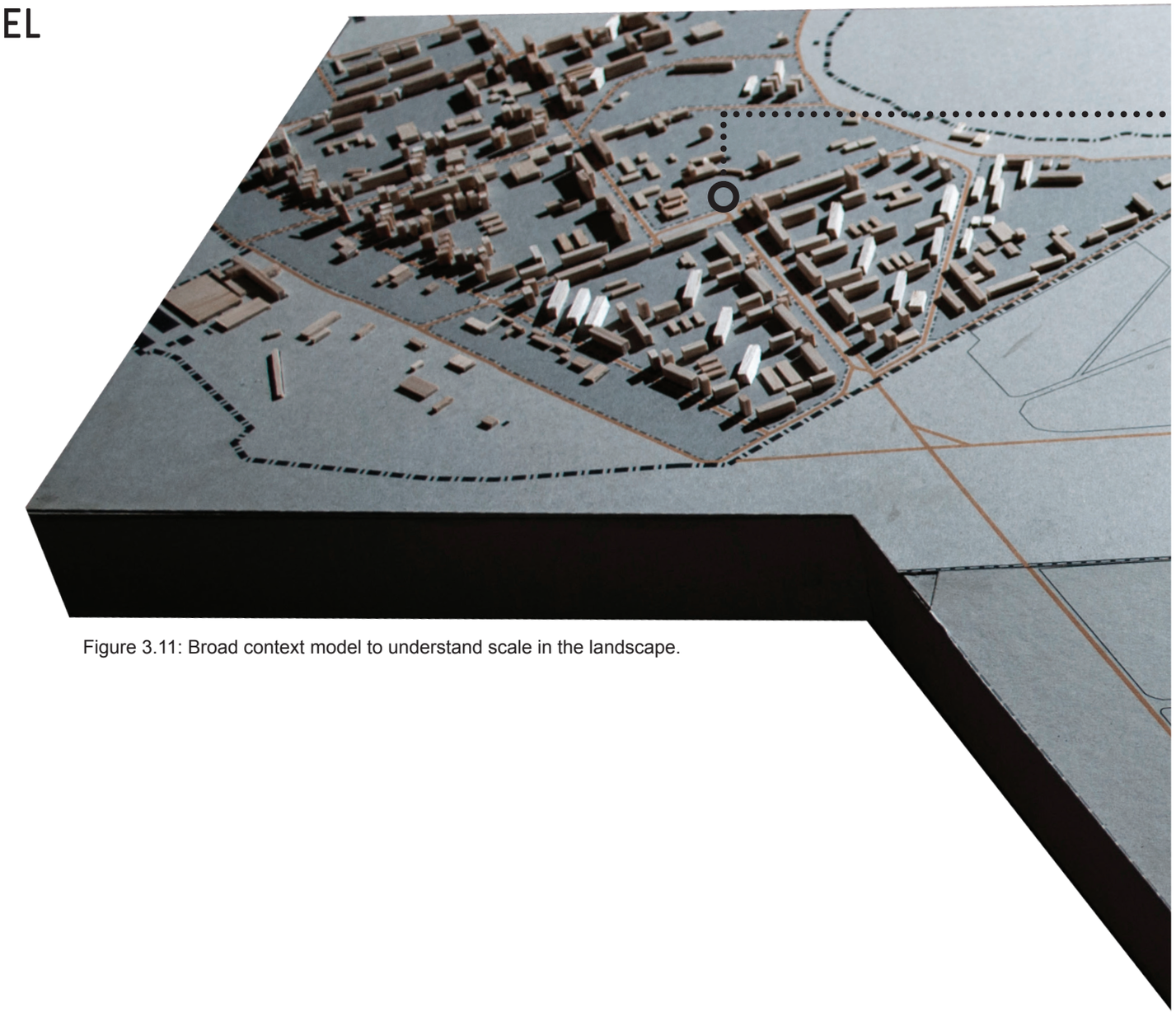


Figure 3.11: Broad context model to understand scale in the landscape.

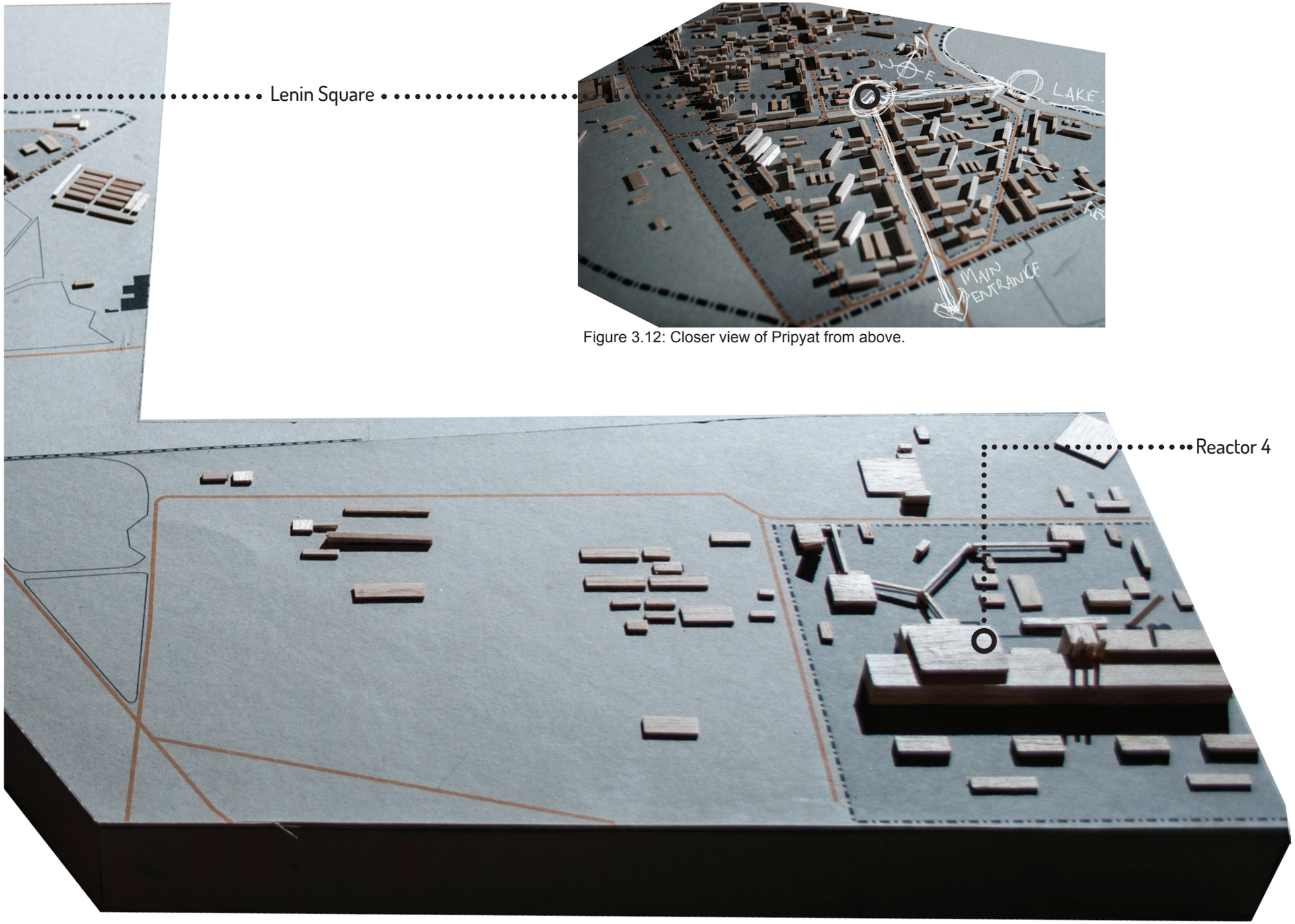


Figure 3.12: Closer view of Pripyat from above.

3.4 SITE SELECTION

The proposed site for the project was chosen as Lenin Square in the town centre (Figure 3.13 & 3.15). Lenin Street, also known as Main Street, serves as the main axis into the town and terminates in the square and onto the Palace of Culture. The square is surrounded by the main public and recreation buildings of the town, namely the Palace of Culture, main supermarket, and Hotel Polissya (pronounced polay-sia). A secondary axis perpendicular to Lenin Street connects Lenin square to the Pripyat river cafe. This axis acts as a cultural axis with a cinema and music school on the route between the square and the cafe (Figure 3.14).





Figure 3.13: Panoramic view over Pripyat showing Lenin Square and Chernobyl Nuclear Power Plant on the horizon (Anon, 2013a: online).

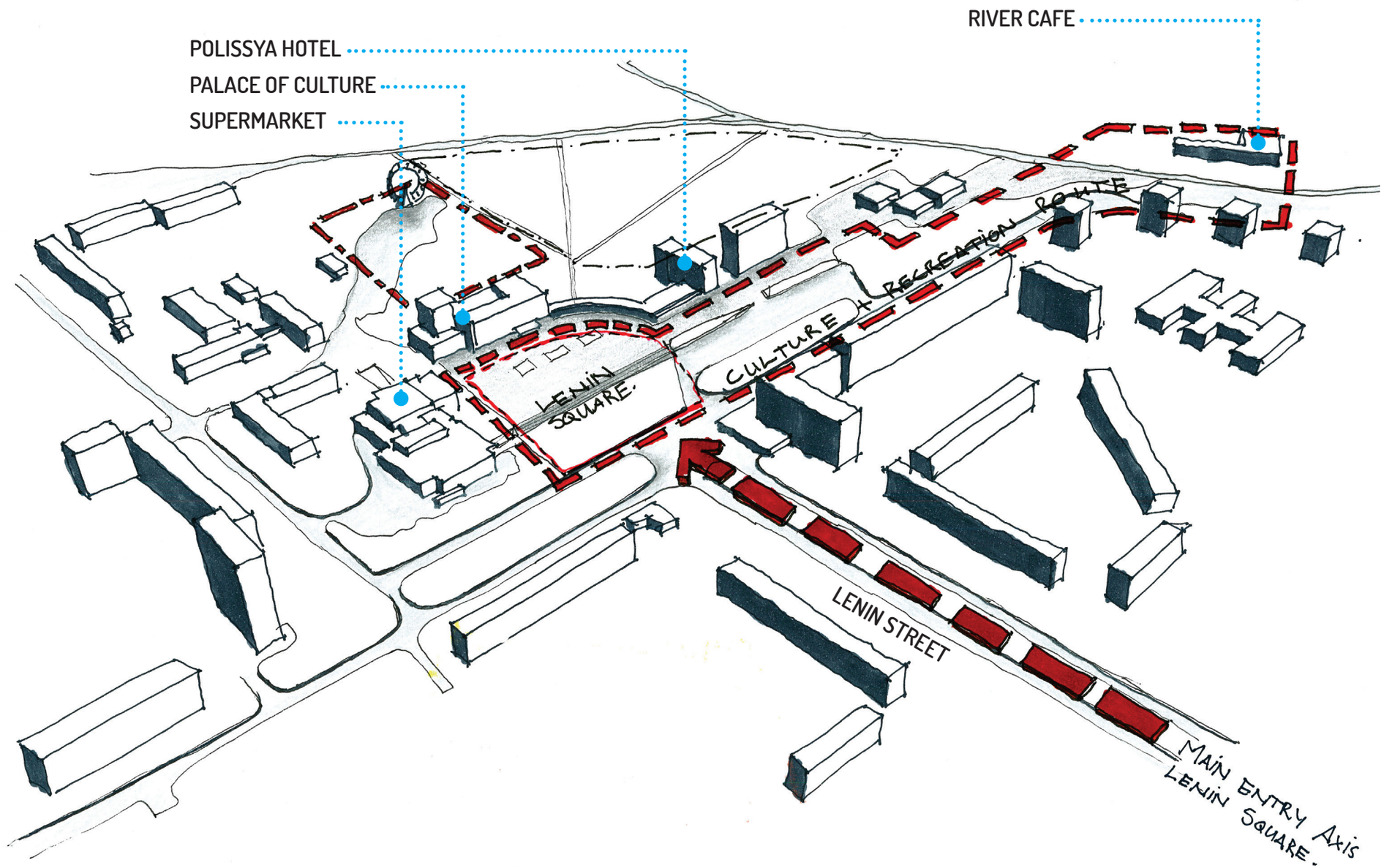


Figure 3.14: Sketch showing main axis and cultural axis.

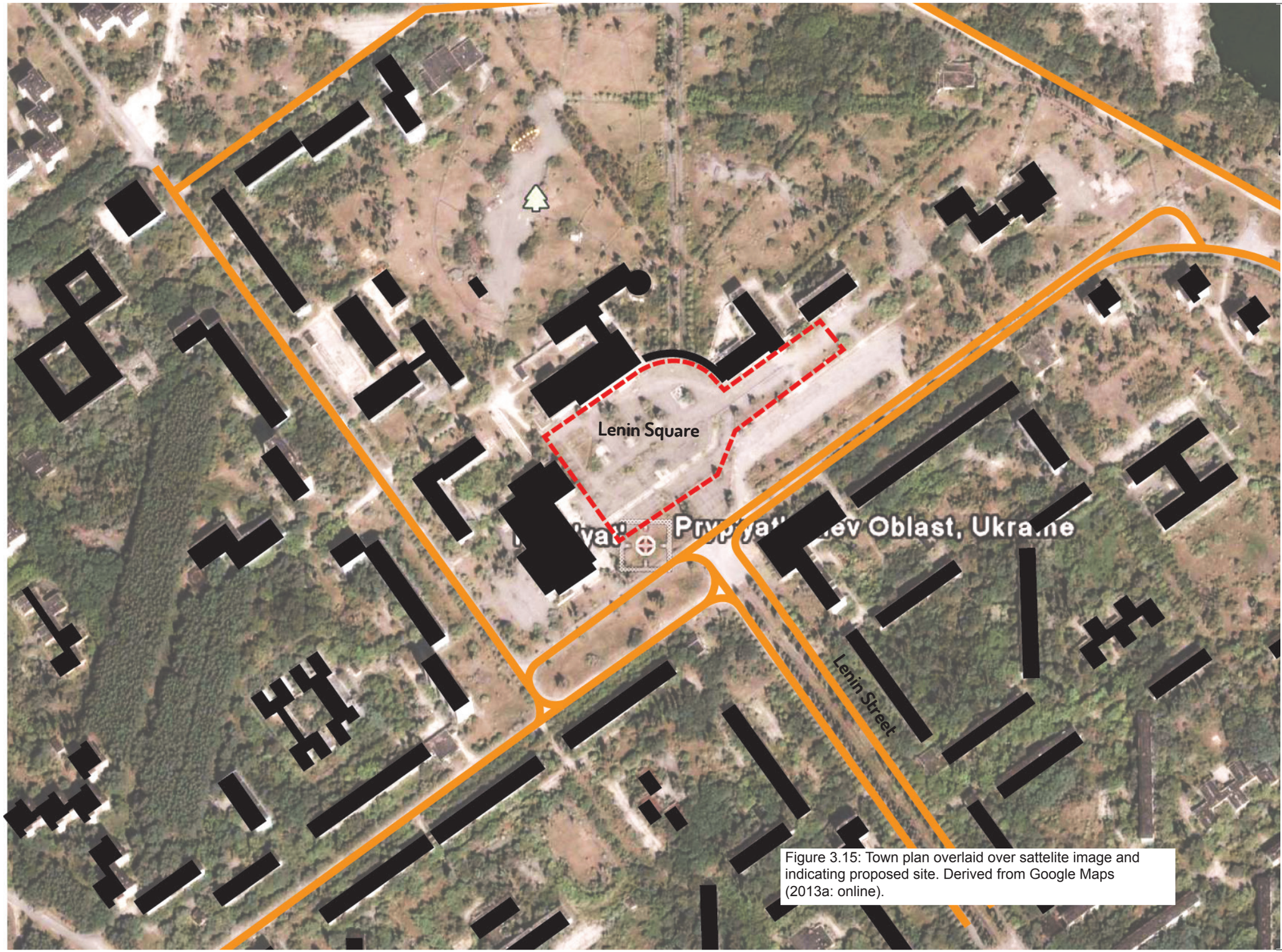
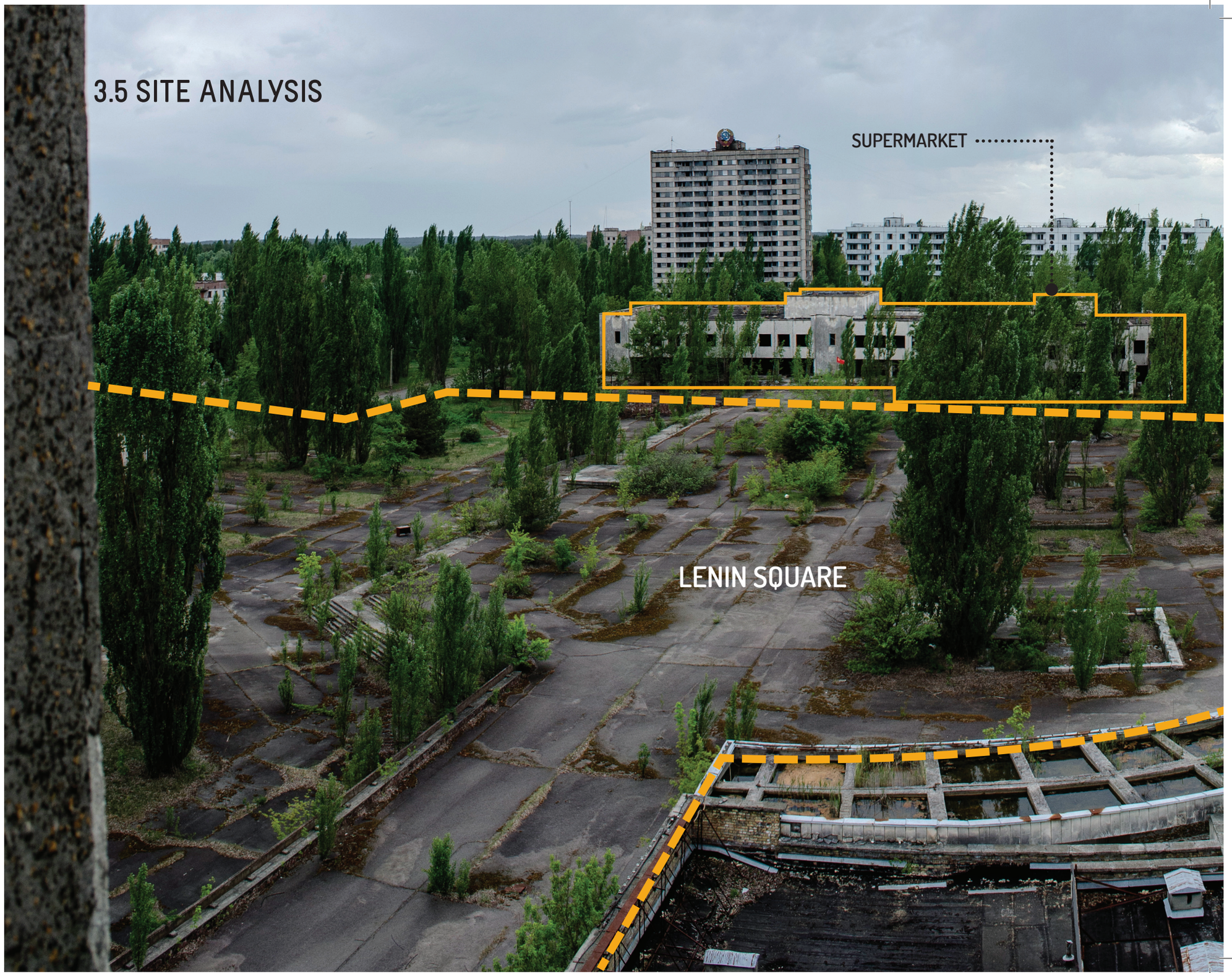


Figure 3.15: Town plan overlaid over sattelite image and indicating proposed site. Derived from Google Maps (2013a: online).

3.5 SITE ANALYSIS



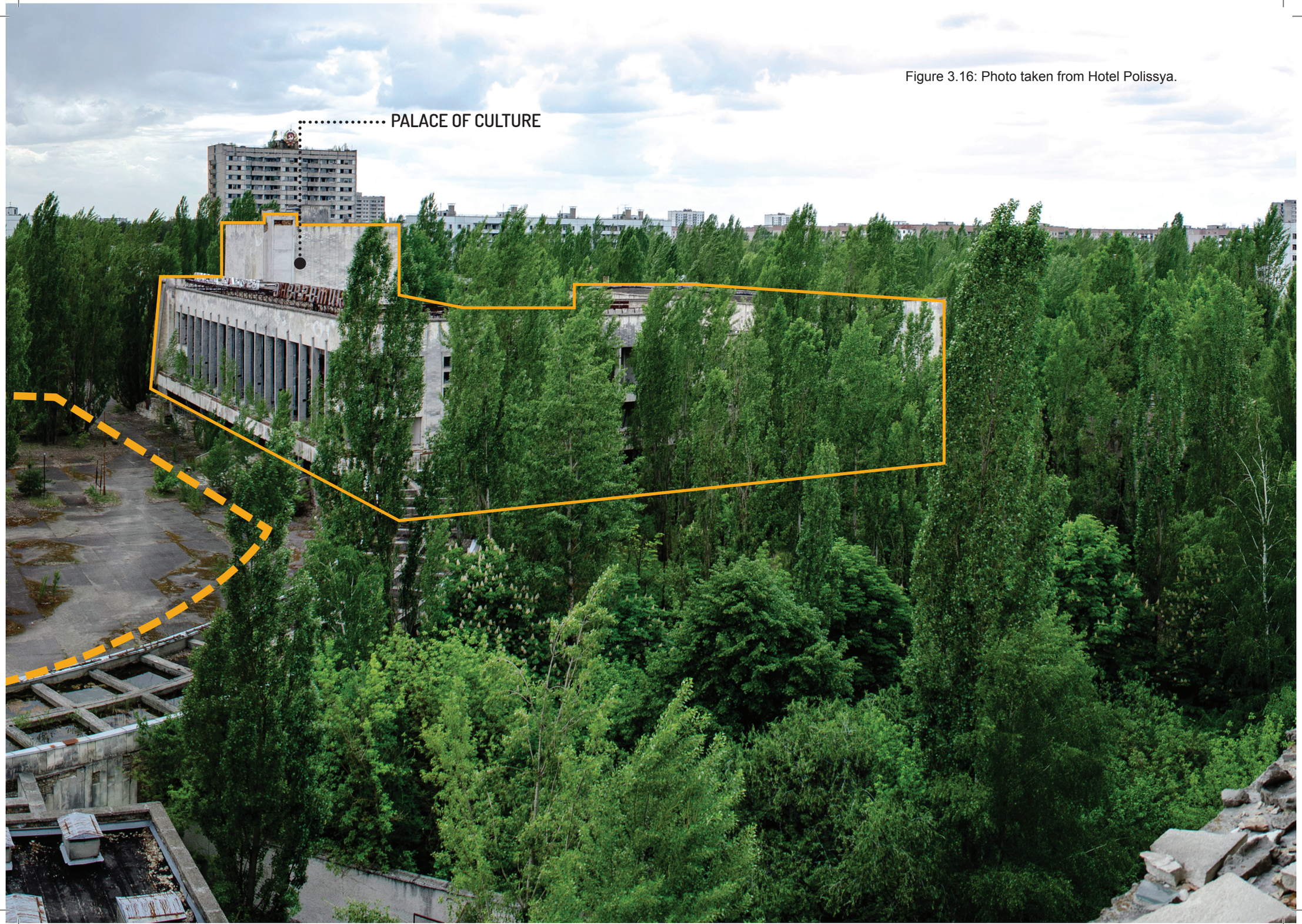


Figure 3.16: Photo taken from Hotel Polissya.

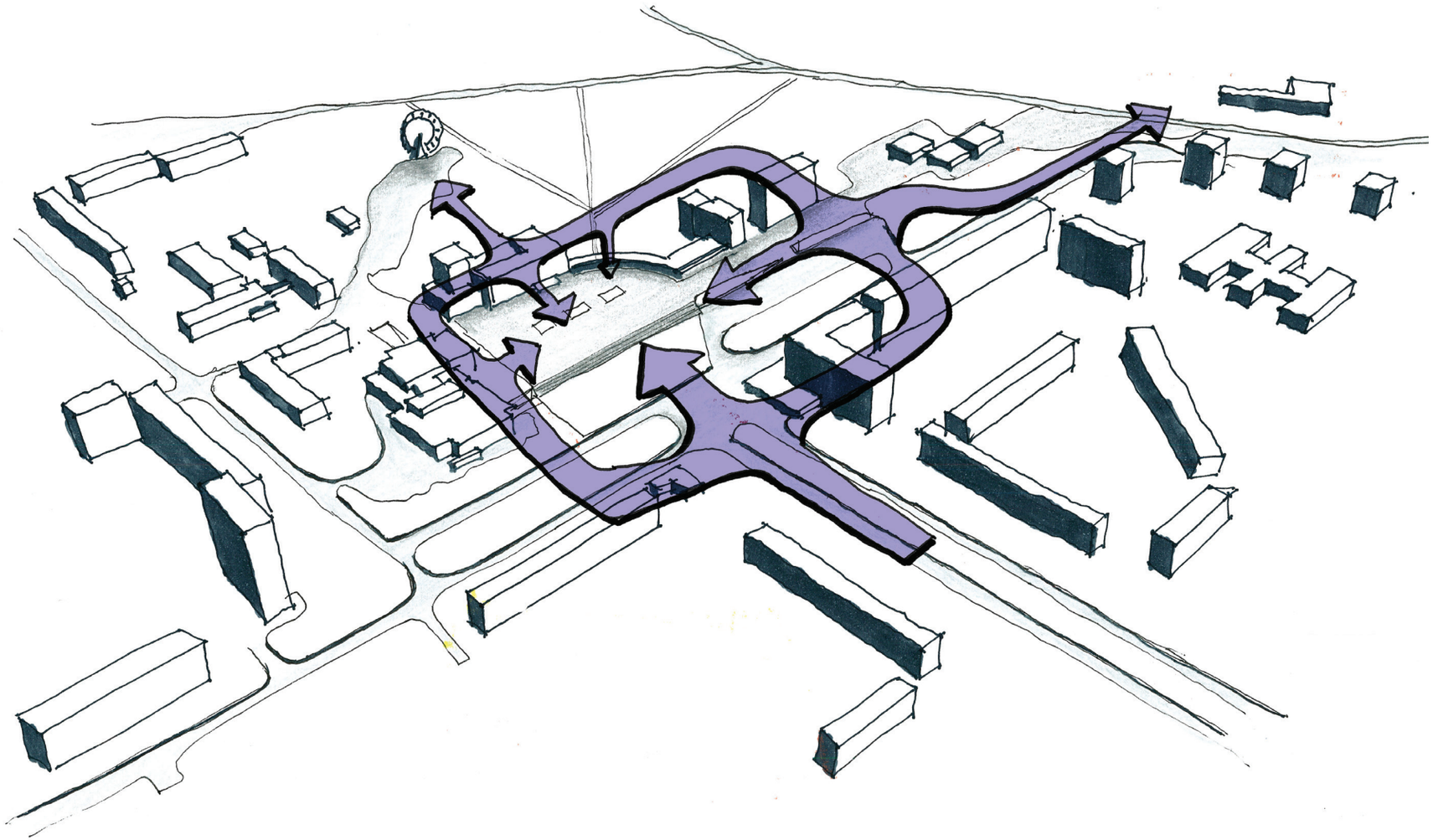


Figure 3.17: Sketch showing site as spatial anchor.

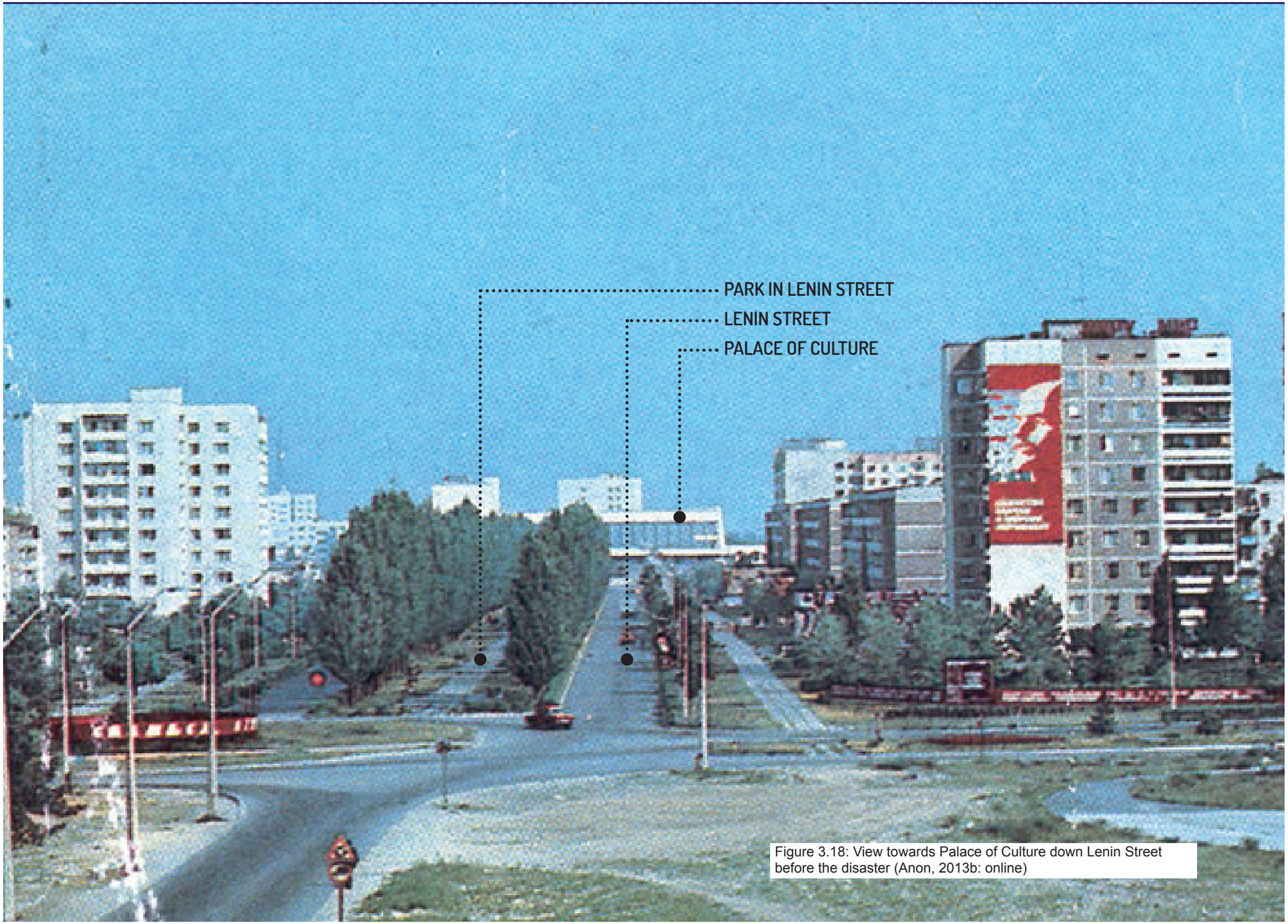
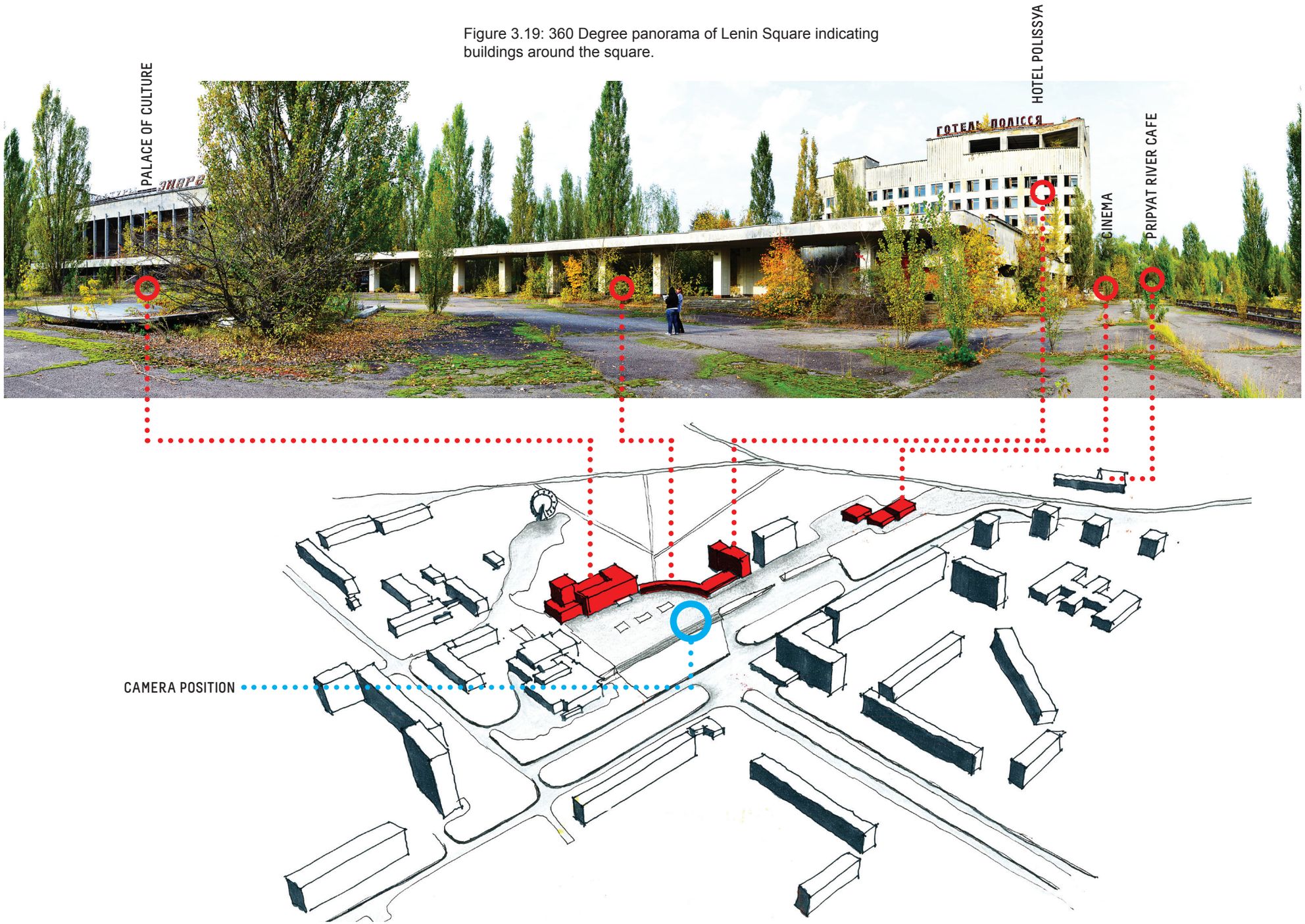


Figure 3.18: View towards Palace of Culture down Lenin Street before the disaster (Anon, 2013b: online)

Figure 3.19: 360 Degree panorama of Lenin Square indicating buildings around the square.



HOUSING
LENIN STREET
HOUSING
SUPERMARKET
LENIN SQUARE



Figure 3.20: 360 Degree spherical panorama of Lenin Square.
Rotate book to experience the square.

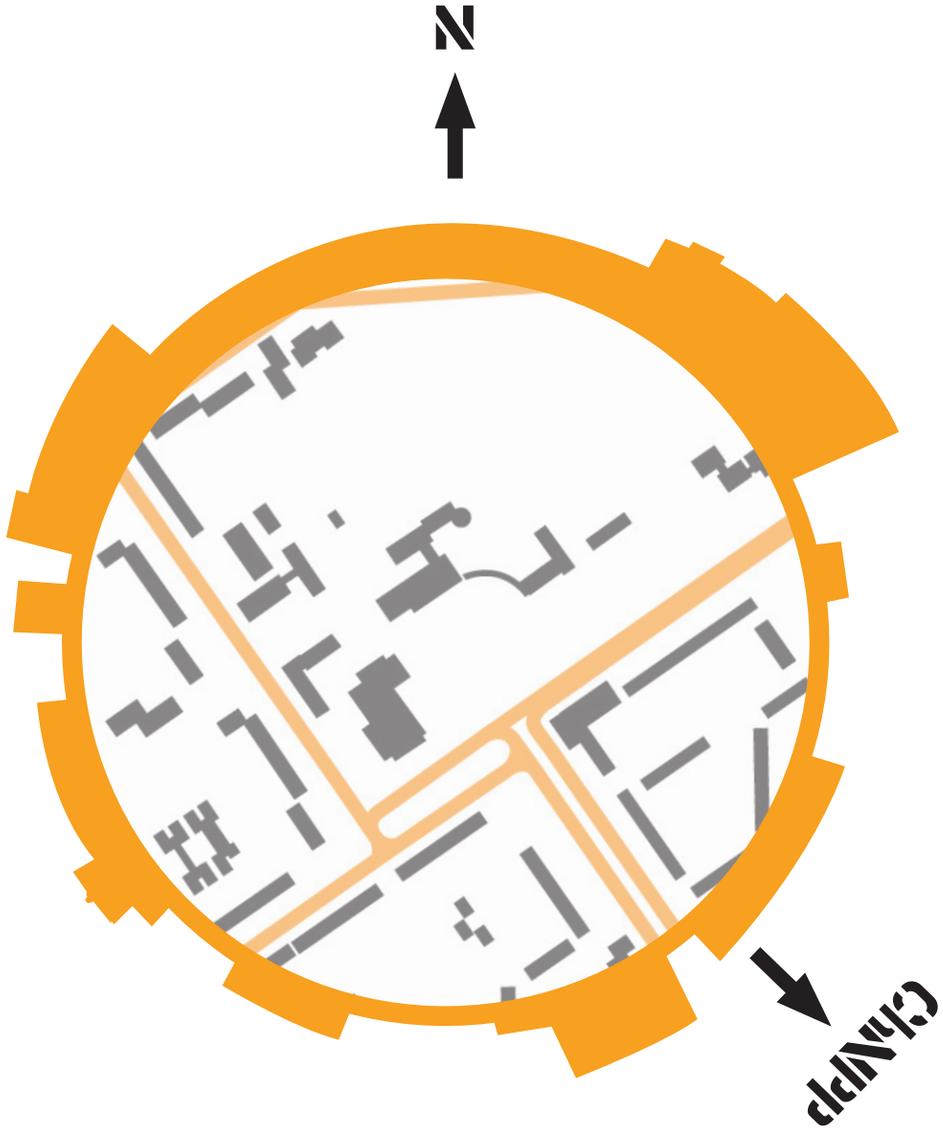


Figure 3.21: 360 Degree spherical panorama of urban form around Lenin Square.

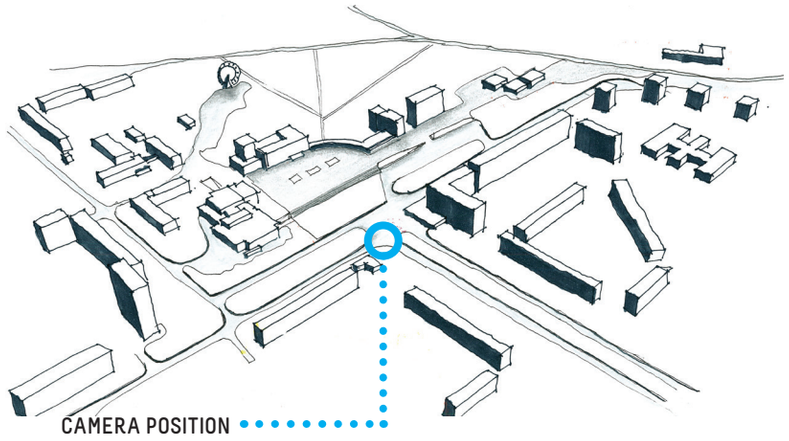


Figure 3.22: 180 Degree panorama from entrance to Lenin Square from Lenin Street.

ROAD DOWN TO RIVER CAFE
RESIDENTIAL BLOCK
LENIN STREET

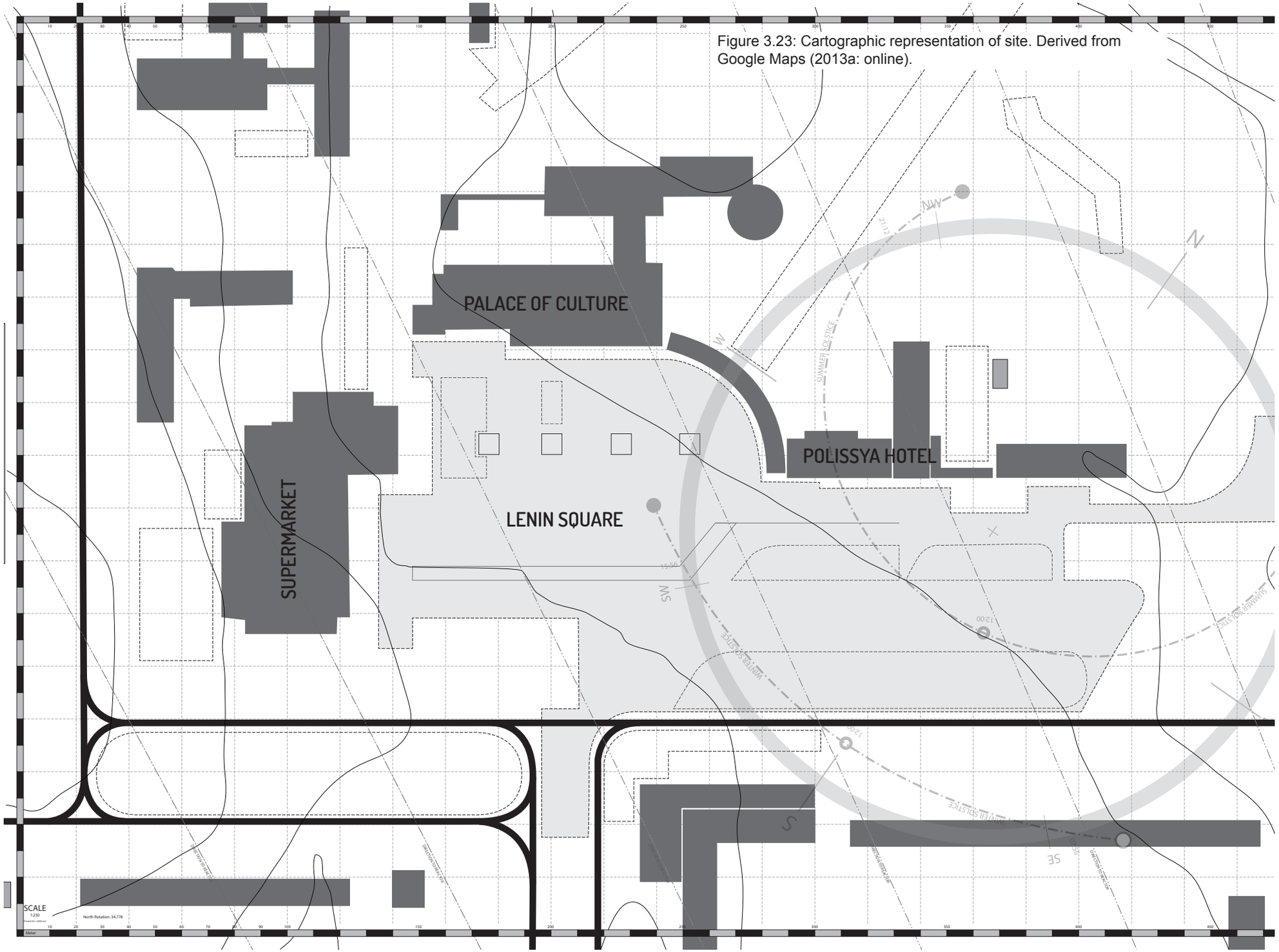


Figure 3.23: Cartographic representation of site. Derived from Google Maps (2013a: online).

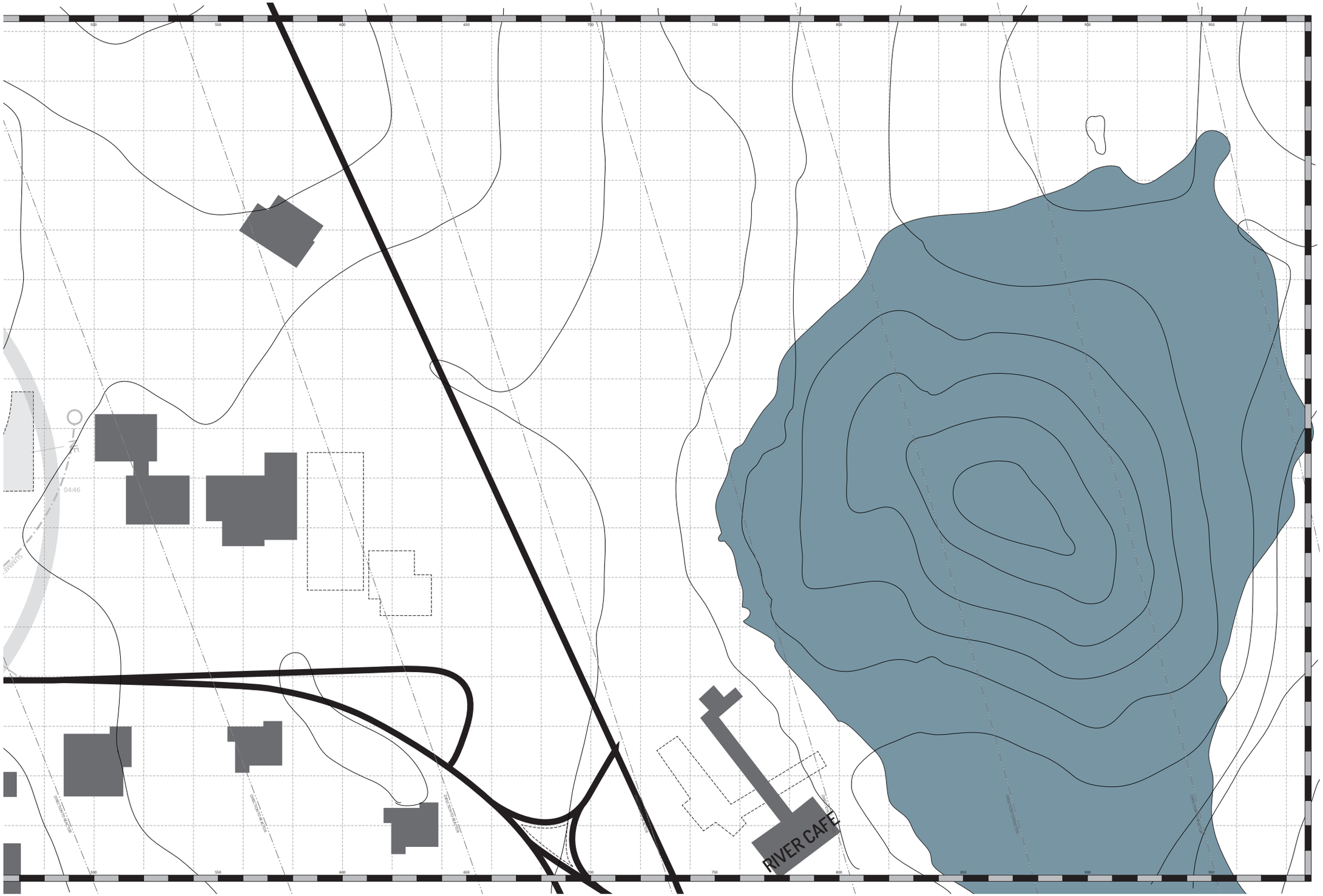
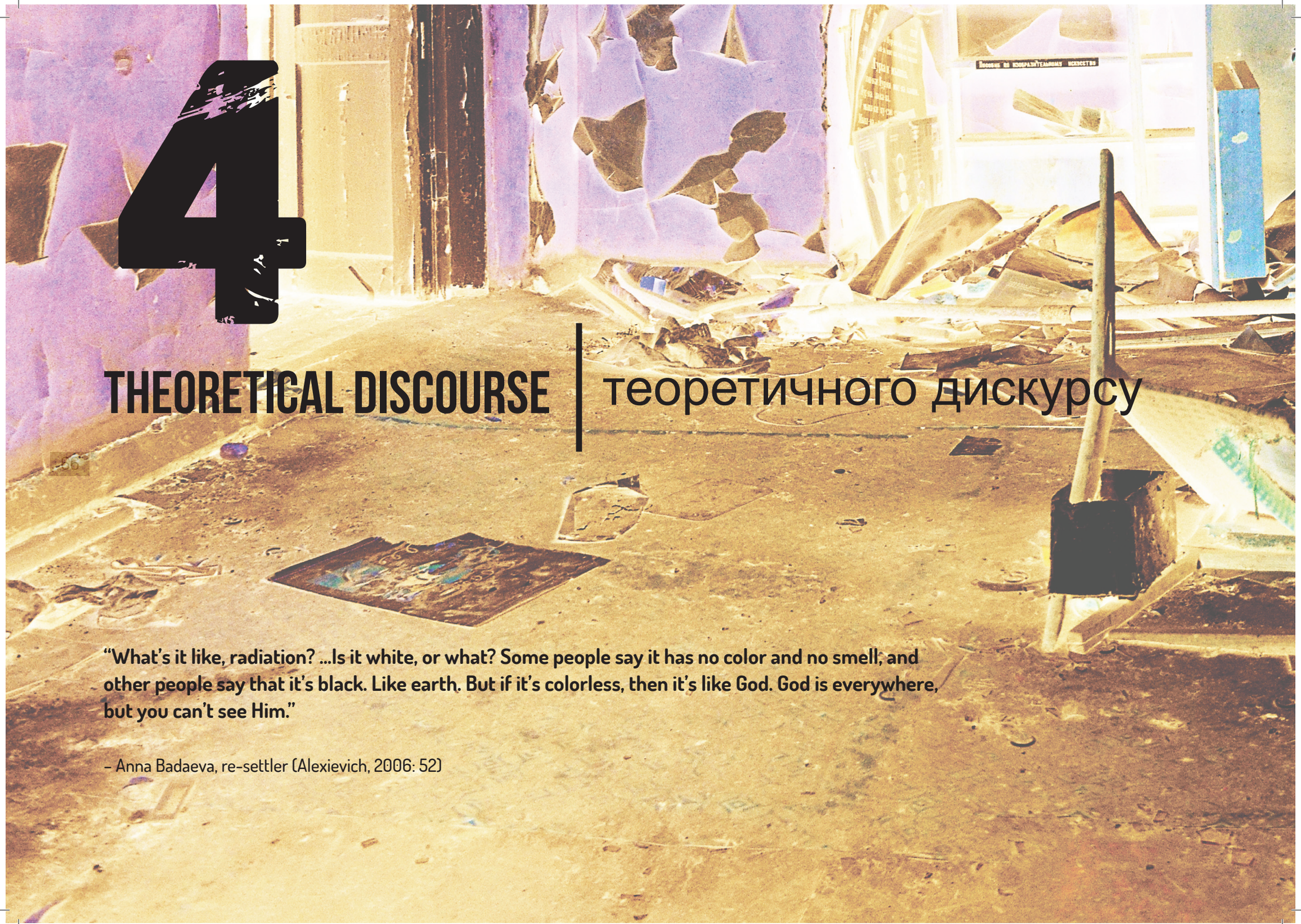

RIVER CAFE

Figure 3.24: Photograph over Pripyat showing scale of Chernobyl Nuclear Power Plant on the horizon line.




CHERNOBYL NUCLEAR POWER PLANT
Range from camera: 4800m



4

THEORETICAL DISCOURSE | теоретичного дискурсу

"What's it like, radiation? ...Is it white, or what? Some people say it has no color and no smell, and other people say that it's black. Like earth. But if it's colorless, then it's like God. God is everywhere, but you can't see Him."

– Anna Badaeva, re-settler (Alexievich, 2006: 52)



4.1 PARANORMAL CONTEXT

The context of Chernobyl and the idea of ‘Chernobyl’ exists in the realm of an ‘otherworldliness’. Chernobyl does not follow the rules for any context and this Zone exists in a state of fiction and fantasy. The Exclusion Zone is removed from the rest of the landscape, removed from its people and removed from reality. Normal rules of physics do not apply to this Exclusion Zone, nor does the normal rules of architecture.

This theoretical discourse consists of various dualities over arched by two main dualities namely, man’s physical, and the landscape’s spiritual experience of the disaster.

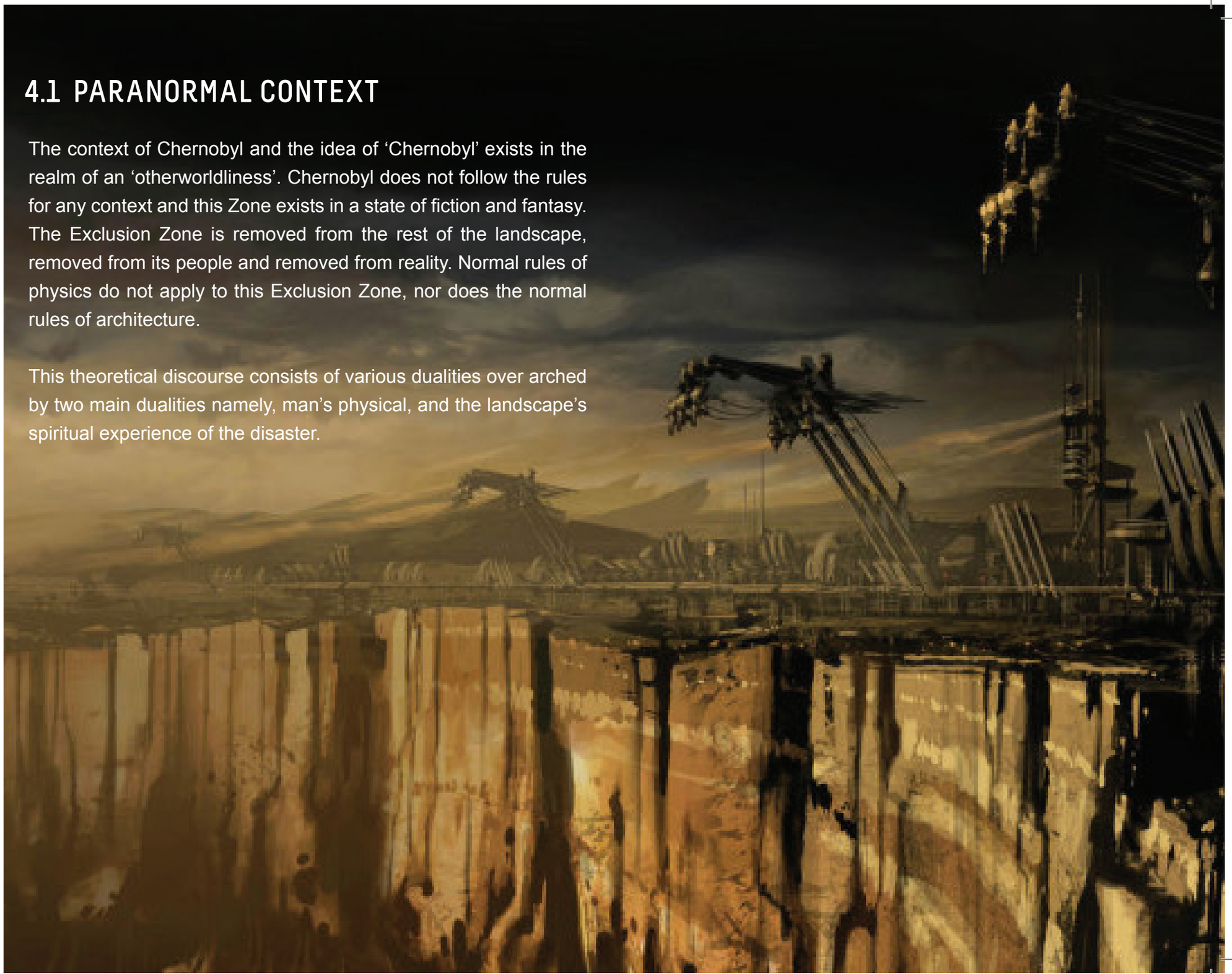




Figure 4.1: Paranormal context (Church, 2013: online).

4.2 RAPTURED

Etymologically, the word ‘rapture’ is an abstract idea that exists in a state of ambiguity. Firstly, there exists its Latin origins from the word ‘raptus’, meaning *to take by force* (Consey, 1996:3). On the contrary, its definition according to the Cambridge Advanced Learners dictionary (1998: 1176) states it as a ‘moment of extreme pleasure or happiness’.

Furthermore a rapture is also defined as a transportation from one sphere of existence to another (The Free Dictionary, 2013: online). Among everyday conversation the idea of a rapture is better understood as the latter, stating a sudden transportation of people from one place to another, or sometimes a sudden *disappearance*.

Walking through Pripyat and exploring the buildings that were so rapidly evacuated, one can’t help but to entertain the thought of a rapture that has taken place here. A child’s doll is still on the bed. The dishes are still in the sink. In the kindergarten there lies a book with a half written sentence.

Abruptly transported out of their beloved utopian town, the people of Pripyat were *taken by force*. *Raptus*. Not only taken by force, but by *a force*. The act, namely *force*, becomes *a force.* Thus, the act becomes an *actor* in the landscape. This force is thus given a contagonist persona in the context.

Opposite Page:
Figure 4.2: A little girl’s shoe and teddy left behind.



4.3 DICHOTOMOUS MAGICAL BEING

In Ukrainian culture, there exists a strong belief in magical realism (Pashchenko, H., 2013: personal communication), and this belief is further extended towards the landscape with specific reference to wooded areas such as the 'Polissya' surrounding Pripyat (Lytovka, O., 2013: personal communication).

Within the wooded areas of the Ukraine there is believed to live an elderly lady named Baba Yaga (pronounced ba-*bye*-ka), who possesses over magical powers that can be either good or evil. Furthermore it is believed amongst Ukrainian folklore that if someone is in need of strength, that this person should go into the woods in search of Baba Yaga. Baba Yaga will then give that person strength based on the pureness of their heart. It should further be noted that Baba Yaga exists in a duality of forms, meaning that she can be perceived as an elderly lady in the forest, but also be interpreted as the *spirit* of the forest, giving a magical persona to the forest (Lytovka, O., 2013: personal communication). It can thus be derived that the Polissya exists on some cognitive level as a living *being.*

Attaching a persona to a landscape can also be observed in the Russian 1979 film, Stalker (1979: film), adopted from the book 'Roadside Picnic', by authors Arkady and Boris Strugatsky. Stalker tells the story of a magical landscape, or Zone, that consists of some sort of persona. This persona is understood and respected by the guide that just goes by the name 'Stalker'. Inside the Zone exists a room where your deepest core desire can come true. This idea is



Figure 4.3: Polissya forming spaces through the buildings of Pripyat. Some spaces are accessible, while others are not.



She communicates through the winds and cradles you in her dark sanctuaries. In the dense darkness you are stripped of your masks and enraptured by her beauty.

– Author's interpretation of Polissya.

exiting and daunting at the same time as the room does not act as a wish granting factory where a person can wish for wealth or possessions but your *deepest core desire* gets manifested.

There is however another being wandering the Exclusion Zone. A contagonist (not to be confused with antagonist) that could not be contained on 26 April 1986. Radioactivity is a mysterious being, a powerful *force*. It has been referred to as the 'invisible enemy'. It is this invisible enemy that caused a *nuclear rapture* in the town of Pripyat. An enemy that cannot be seen terrorizes a human being on a much deeper psychological level than a physical manifestation that can be seen and comprehended. It is this property of radioactivity that caused psychological damage far worse than the physical effects it has on the *human* body.

This contagonist today wanders the dense and sometimes dark spaces of Pripyat and Polissya, creating an ambiguous place where you can be overwhelmed by the uncanny beauty of absence, while your Geiger counter makes you aware of the *force* in your midst. Baba Yaga thus becomes even more elusive *to humans* in this context, as this contagonist now share a space with her. She is more elusive, but not unreachable, because of the limits imposed on *humans* by this *force*. Inevitably they create secret spaces where humans are prohibited. It is in these spaces that humans are well aware of, but never experience, that the true dynamic of Baba Yaga and the contagonist will be manifested.

Magical realism, in Ukrainian *магічний реалізм.* Two beautiful words pronounced ma-hish-knee ree-ah-lee-zm. The 'ah' sound is pronounced with a mysterious tone.

- Author's personal communication on two separate occasions with Pashchenko (2013: personal communication) and Lytovka (2013: personal communication)

Figure 4.4: Pripyat prison.



4.4 SPLITLINE OF CONTAMINATION

The basic nuclear fission process consists of splitting an atom that results in the sudden release of energy and radiation. This process is controlled in a nuclear reactor and the enormous release of energy is used to generate electricity (Brain & Lamb, 2000: online). At the Chernobyl Nuclear Power plant, this process ran out of control and the release of energy could not be controlled. A *force* could not be contained and as reactor number four exploded the highly radioactive elements were spread over the landscape.

As radioactive dust settled, it created a blanket of contamination on the ground line. This blanket effectively split the holy earth from the divine sky in much the same way that an atom gets split in the nuclear fission process. As with the nuclear fission process a violent reaction followed in the form of a traumatic evacuation, further causing a division of man from his beloved landscape. Man was raptured from his landscape, leaving the buildings and the urban spaces empty and open to any being left behind.

Martin Heidegger in his book, Building Dwelling Thinking wrote about a concept called 'The Fourfold' as the main condition in dwelling or for man *to dwell.* The fourfold is summarised in The Cultural Studies Reader (2011: online) and consists of,

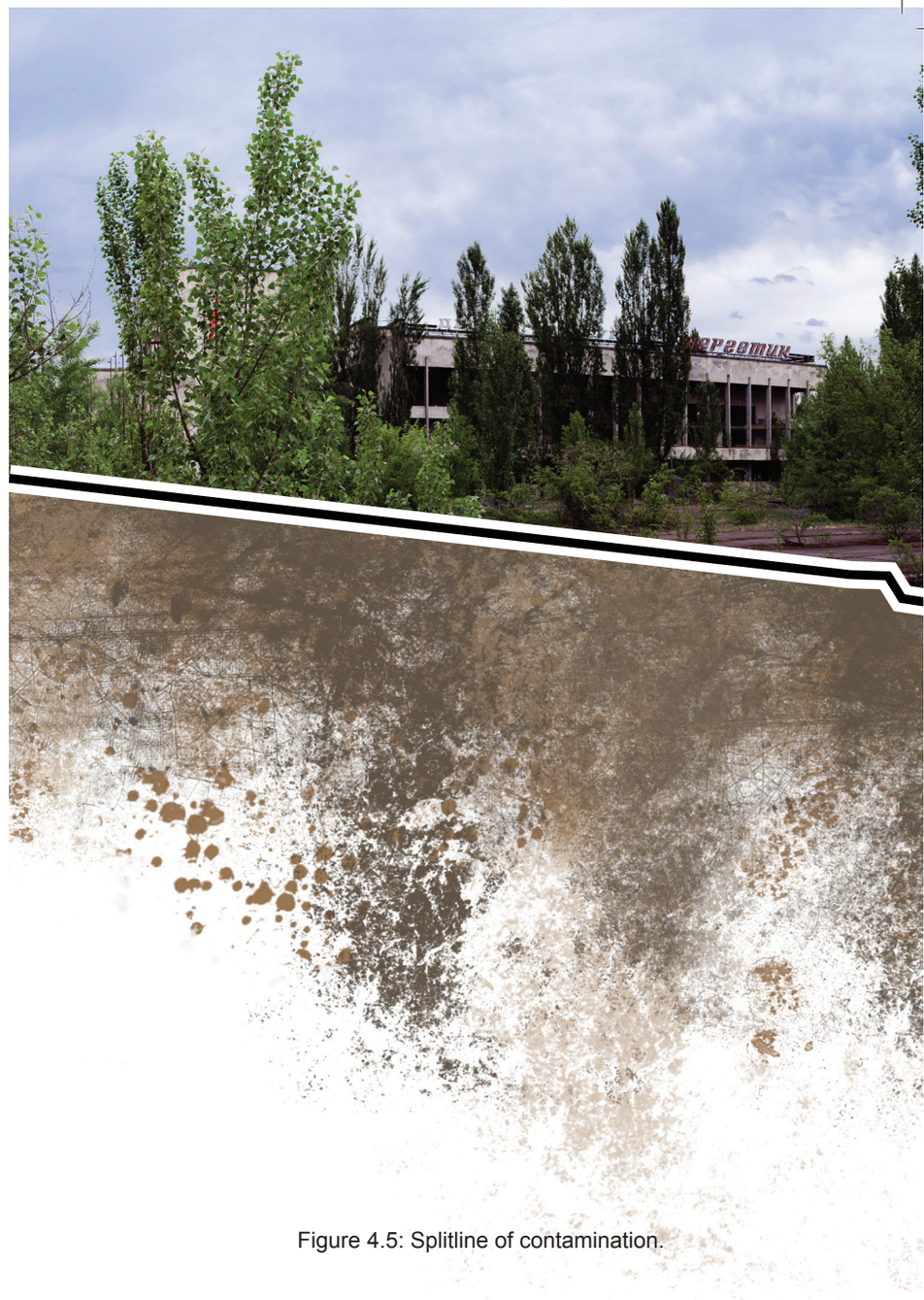
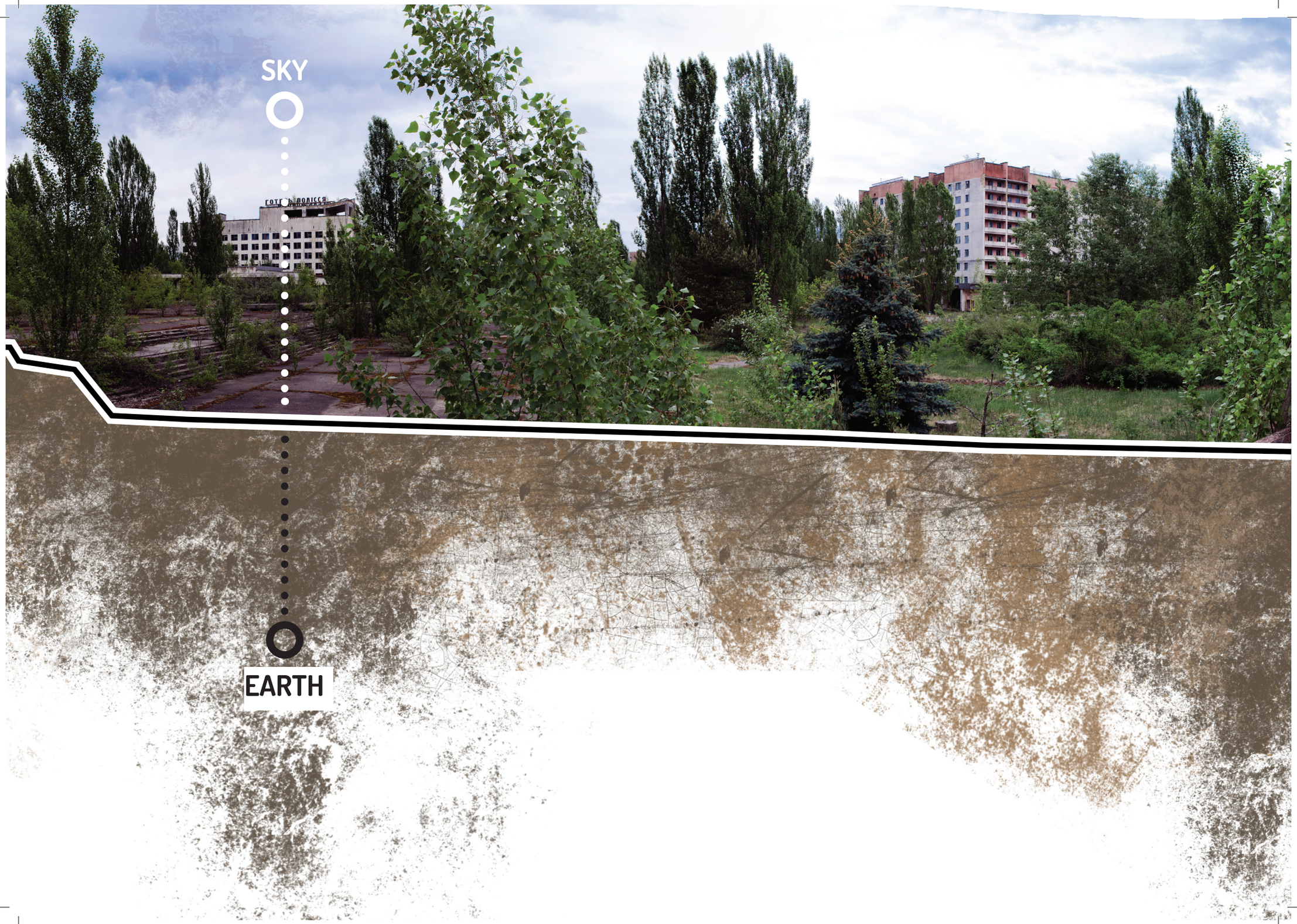


Figure 4.5: Splitline of contamination.


SKY
EARTH

Earth: The surface we exist on that nurture and provide for us. Although we are in constant contact with the earth it can be perceived as evasive (The Cultural Studies Reader, 2011: online). The earth is also seen as holy in the Ukrainian context.

Sky: It carries with it an eternal spiritual component in the sense that humans gaze towards the sky and exist in a dual state of *here* and *there* (The Cultural Studies Reader, 2011: online).

Mortals: Referring to human beings and their temporal existence. The realization that death as an imminent constant in the life of a human being (The Cultural Studies Reader, 2011: online).

Divinities: This part of the fourfold refers to spirituality and spiritual beings, with no reference to specific religions per se, but rather of a divine creator (The Cultural Studies Reader, 2011: online).

According to Heidegger these cannot be separated as they exist in a unity and in relation to one another. (The Cultural Studies Reader, 2011: online). The Chernobyl context does however exists in a different realm than normal landscapes. In this case the radioactivity has split the fourfold into two distinct parts, separating earth from sky and splitting man from its divinities in this context. Not only has holy earth and divine sky been separated, but mortals have been separated from the magical Polissya.

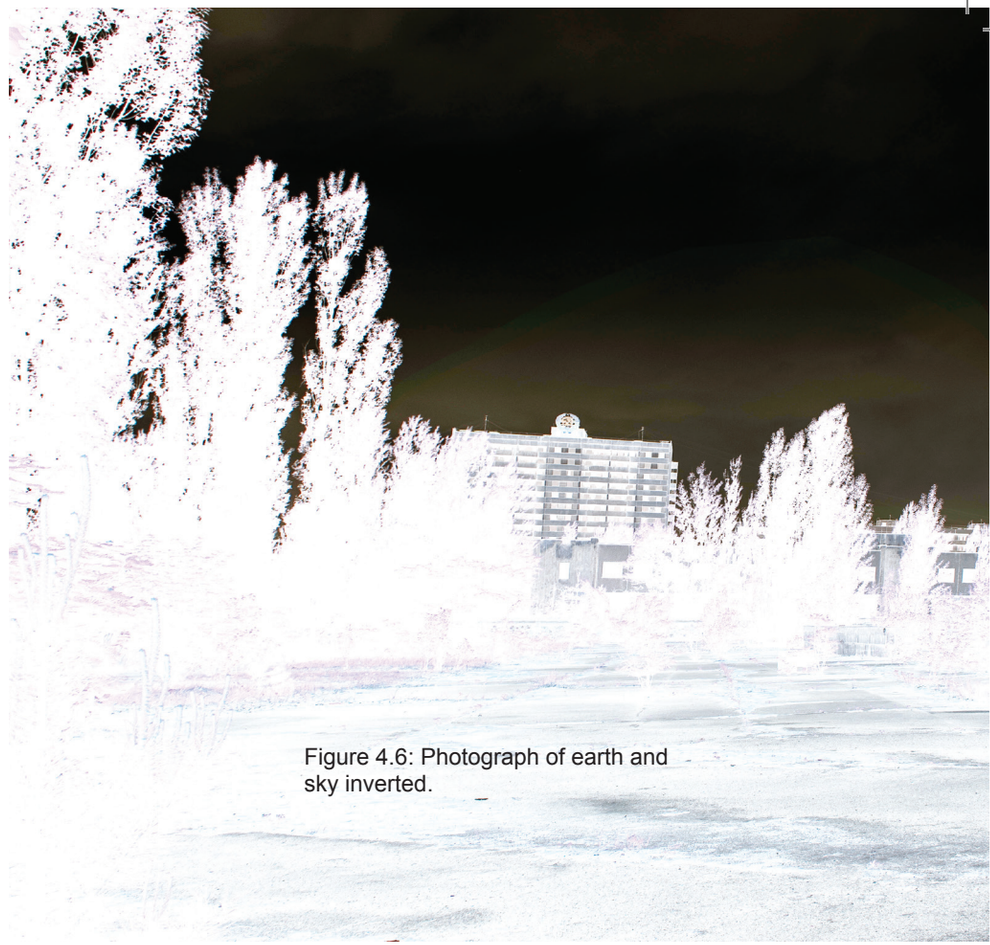


Figure 4.6: Photograph of earth and sky inverted.

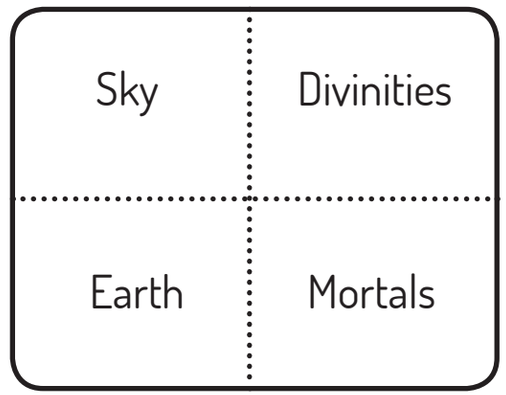


Figure 4.7: The author's interpretation of Heidegger's Fourfold.

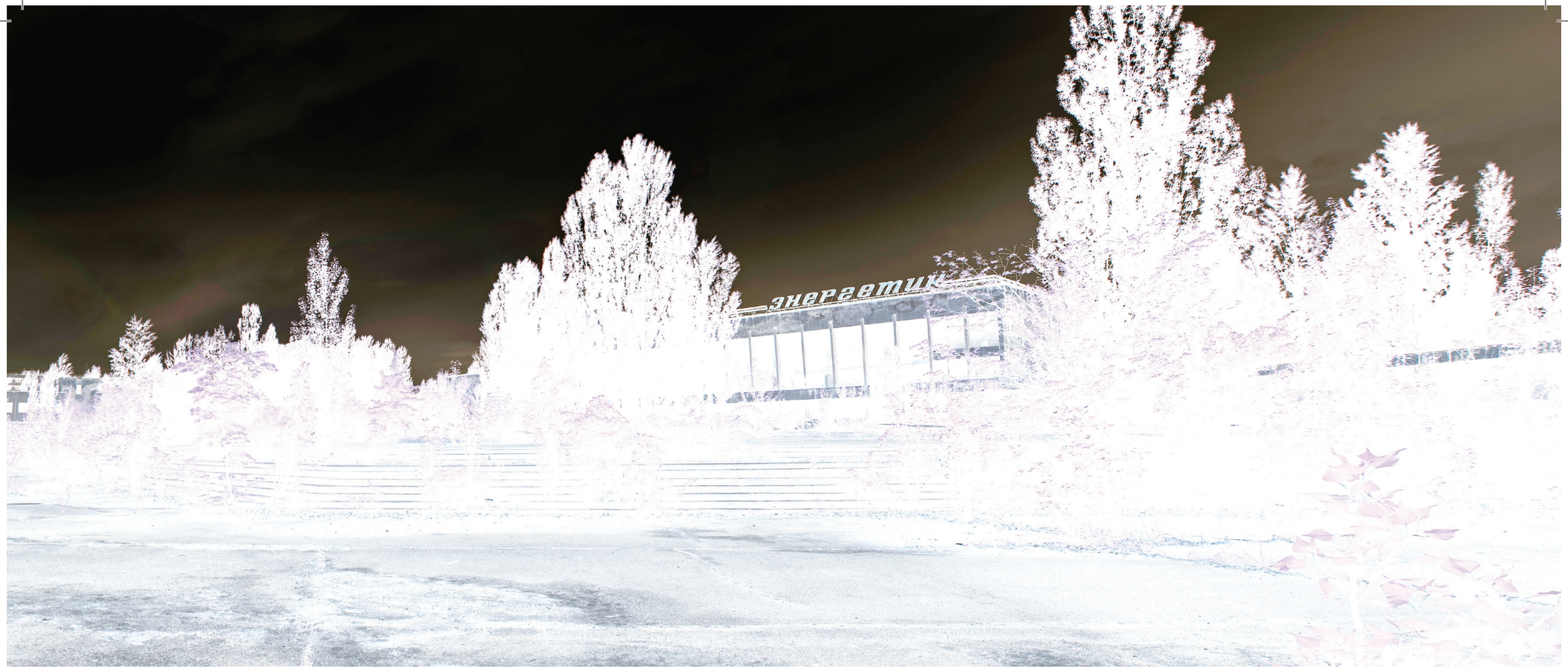


Figure 4.8: The Fourfold as it exists in the Chernobyl context.

4.5 THEORETICAL DISCOURSE

Theoretically the design aims to create fusion of earth, sky, man and magical landscape who stands divided by the result of an uncontrolled fission process. The design takes into account that there should exist spaces both above and below the ground line which need not always be immediately accessible to human beings, but belong to the spirit of Polissya. This design is a discourse between Polissya and the contagonist, between earth and sky, man and magical. A juxtaposition that weakens to *fusion* over time. A *disrapturing* of a landscape resulting in an *enrapturement*. Somewhere between these opposites, there might just be a temporal place for humans. Polissya is patient, she will only ask for the replacement of her beloved people in their death. Their ashes will be spread by the same wind that spread the enemy that raped her. Through this action that will last centuries, and the contagonist replaced by the ashes of her people, she will be pure again.

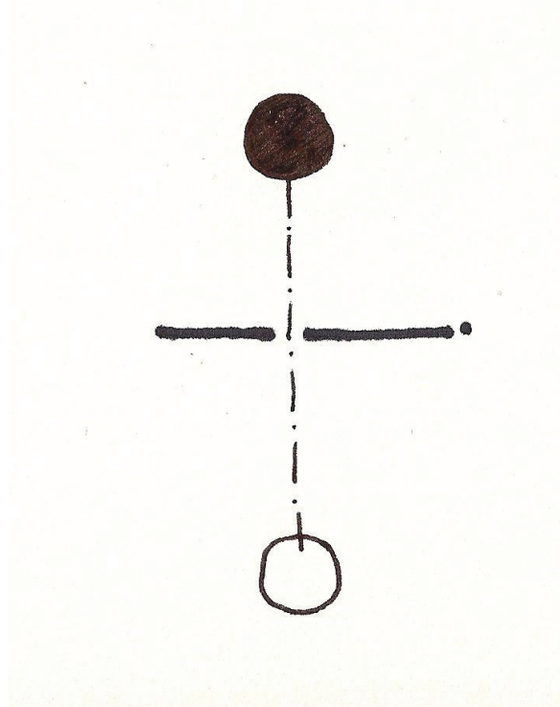


Figure 4.9: Theoretical idea.



Figure 4.10: Secret space. The lecture hall in the Palace of Culture.

5

PRECEDENT STUDIES | прецедент дослідження





"We were leaving – I took some earth from my mother's grave, put it in a little sack. Got down on my knees: 'Forgive us for leaving you.'"

– Anna Artyushenko, returned to evacuated village (Alexievich, 2006: 68).

5.1 PRECEDENTS OF TYPE

City of Excavation, Peter Eisenman.

This lesser known project of Peter Eisenman was a competition entry for a project in Berlin at Checkpoint Charlie (Van der Streaten, 2003: online). Eisenman overlays different grids in layers that represent the different grids of the city as it evolved over time. A below ground park is then created to house these grids on the site, and the oldest grid is placed deepest into the excavation. As the grids and the user move through time these grids are placed higher and on top of each other in the artificial excavation (Eisenman, 1994:76).

The concept of submerging underneath the normal ground level can be connected to the subconscious, and the act of lowering the body into the ground can be seen as entering, or in the case of Eisenman, digging for deeper meaning (Van der Streaten, 2003: online).

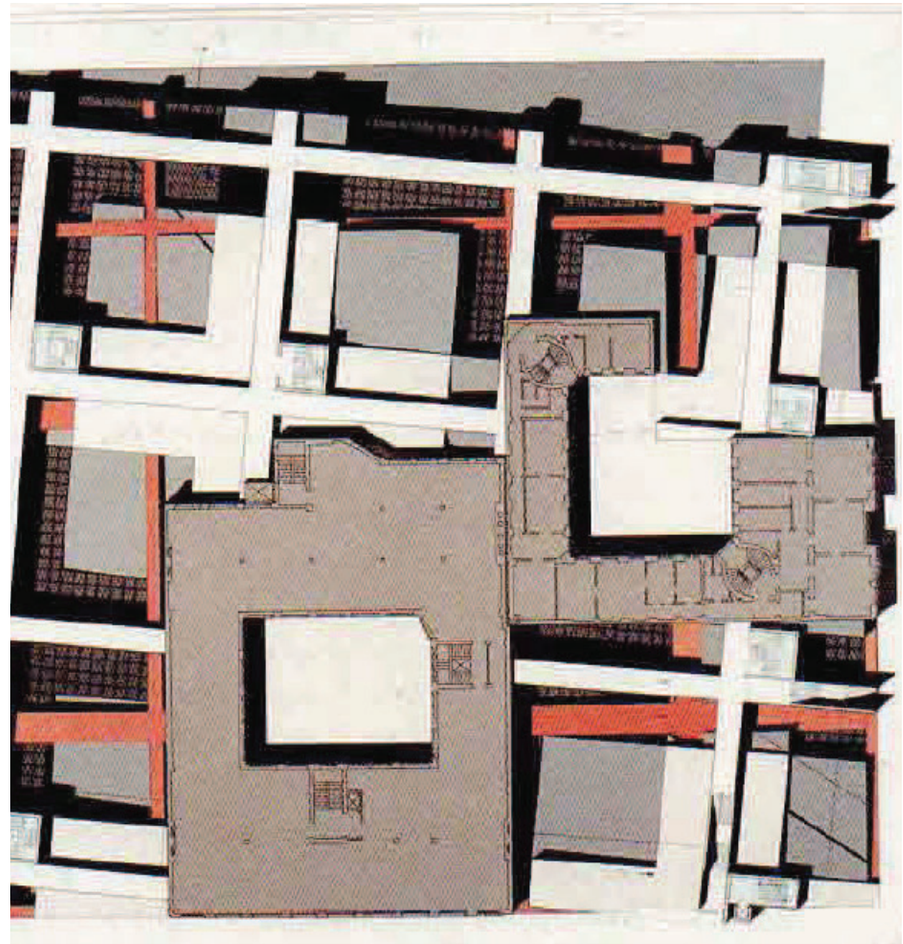


Figure 5.1: Proposed plan for City of Excavation. (Eisenman, 1994: 77).

Why is this precedent relevant?

• Addressing the ground or “earth” which is seen as holy in the Ukraine.

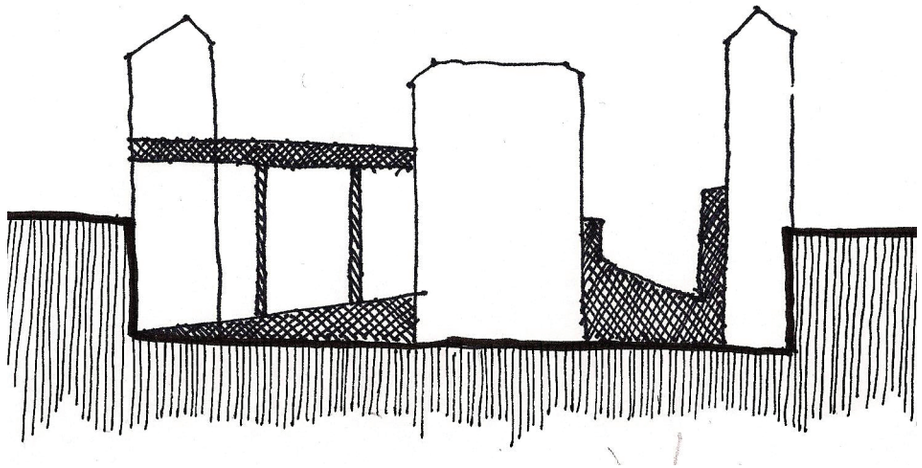


Figure 5.2: Section derived from Eisenman's concept sketches (Eisenman, 1994: 93). Individual is submerged in meaning, time and physical space.

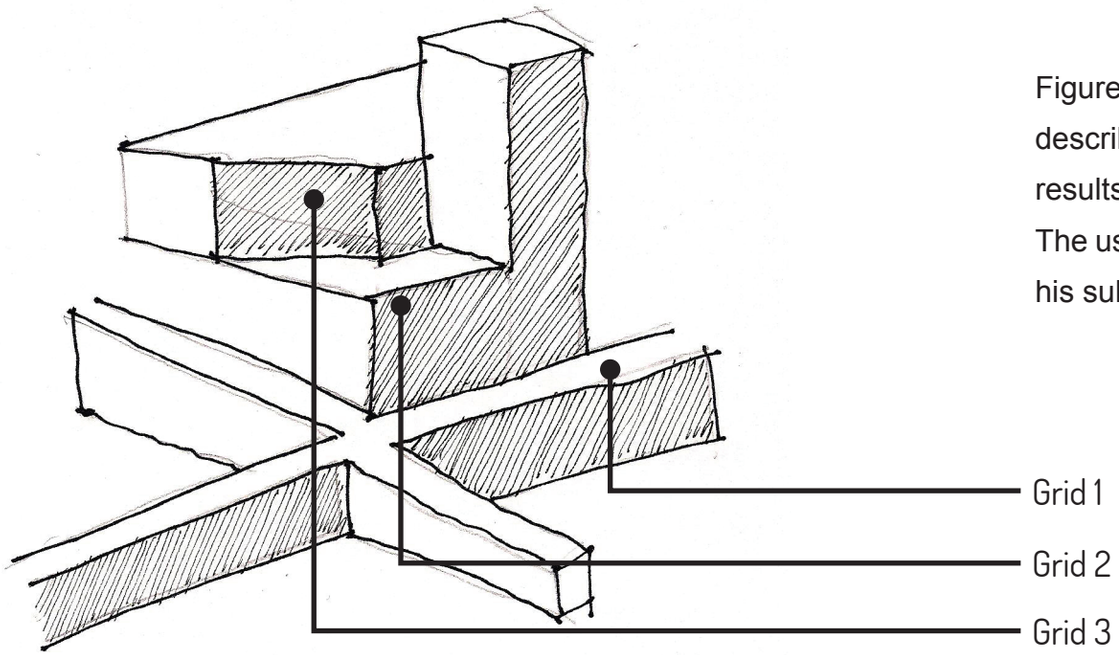


Figure 5.3: Layers of archeological meaning as described by Van der Streaten (2012: online), that results in layers of meaning into the history of Berlin. The user is thus seen as the archeologist digging into his subconscious as well as the site.

Kyiv Pechersk Lavra Cave Monastaries, Ukraine

Currently listed as a UNESCO World Heritage site, the Kyiv Pechersk Monastery complex consists of a range of religious buildings and grew over the years into a small religious town inside the city of Kyiv. The focus though of this precedent is the oldest part of the complex, known in English as the Cave Monasteries, or in Ukrainian as Pechersk Lavra.

The origin of the caves dates back to 1051 when a monk named Anthony settled in a cave on the site. Over time the caves became a necropolis for the monks who lived there and their mummified remains are still to be seen upon visiting of the caves (UNESCO, 2013: online).

The underground caves are not only a necropolis today, but still functions as a religious space for Christian Orthodox pilgrims. Upon visiting the caves, the author noted that the break-away spaces are being used for important religious family events like christenings. There exists also prayer spaces and shrines of different levels of privacy in this network of caves (Kiev Pechersk Lavra official site, 2013: online).

It is important to note that the caves are referred to as a *labyrinth* (Kiev Pechersk Lavra official site, 2013: online), although due to the lack of orientation underground, it can easily appear as a maze and can prove very daunting for a person suffering from even the slightest case of claustrophobia.



Figure 5.4: Interior of a prayer space (UA-Travelling, 2012: online).

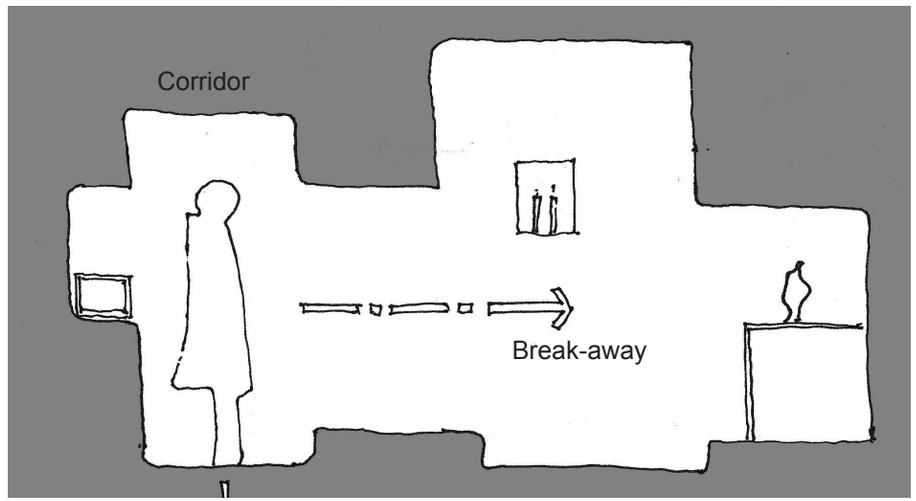


Figure 5.5: Sketch of break-away space from main corridor.

Why is this precedent relevant?

- Addressing funerary rituals.
- Addressing the ground or 'earth' which is seen as holy in the Ukraine.

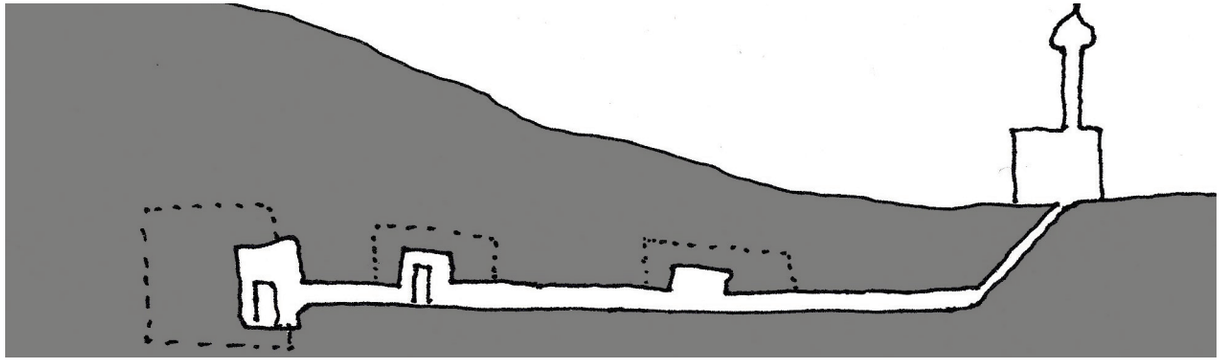


Figure 5.6: Rough sketch of caves in section.

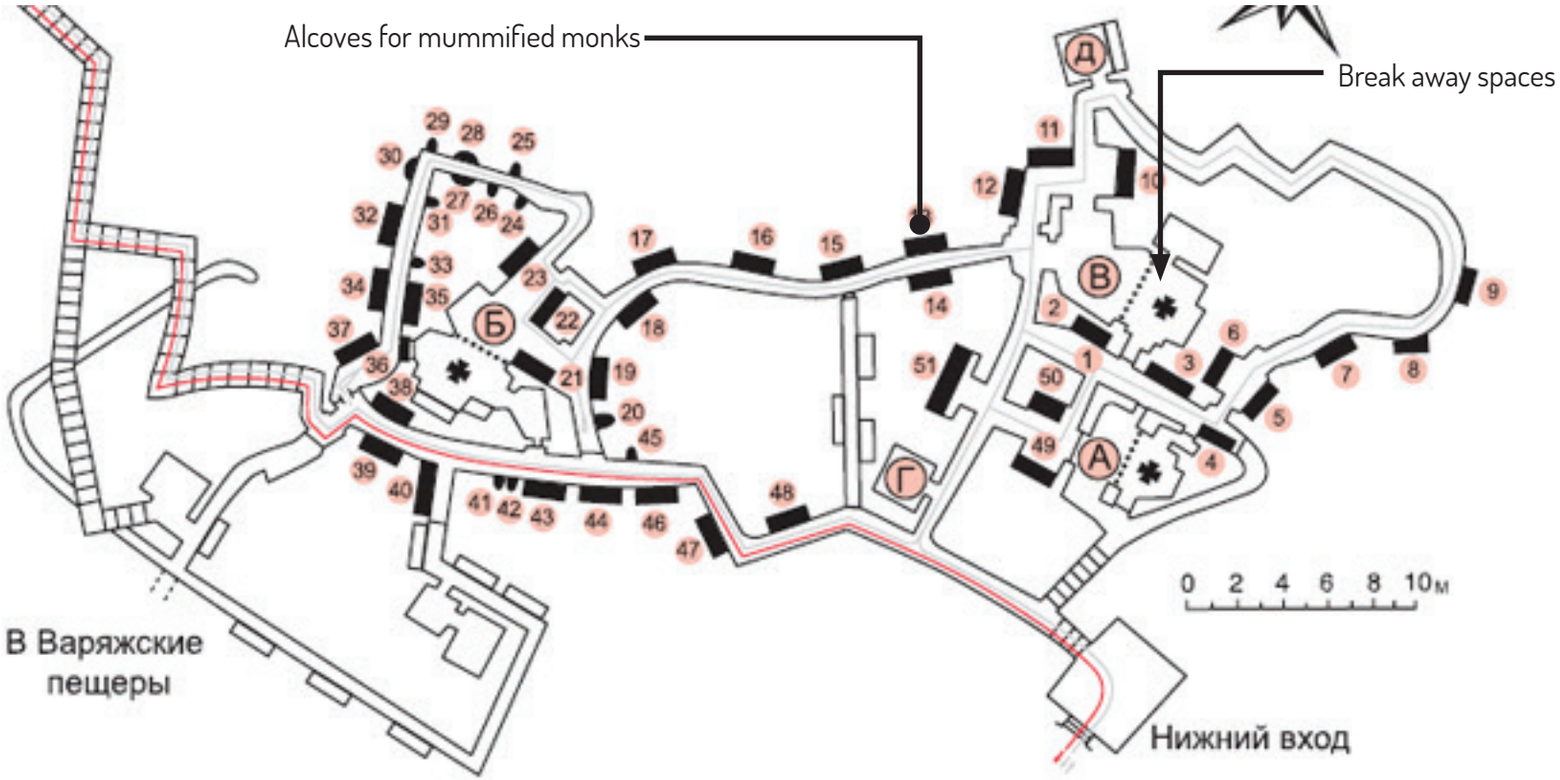


Figure 5.7: Map of the far caves (Kiev Pechersk Lavra official site, 2013: online).

Baikova Cemetery and Crematorium, Kyiv, Ukraine

A site visit to the Baikova Cemetery was conducted on 11 May 2013 while in Kyiv. Funerary and burial customs were observed in order to inform the design.

As stated earlier the ground or earth has a significant meaning in the context and can again be observed in the Baikova Cemetery. Terraces radiate outwards from the crematorium and both niches for cremation as well as casket burials are inserted into the terraces.

Figure 5.8: Site sketch of crematorium and cemetery in background.

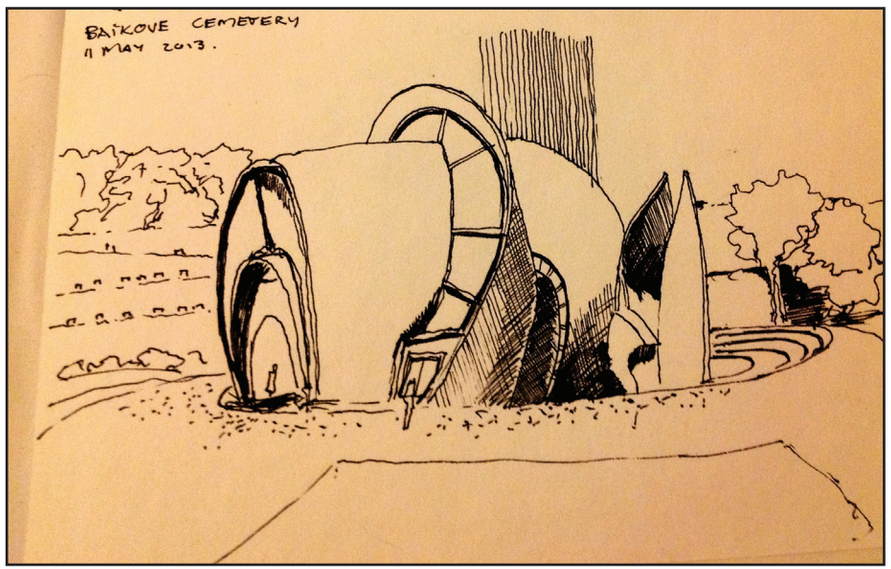
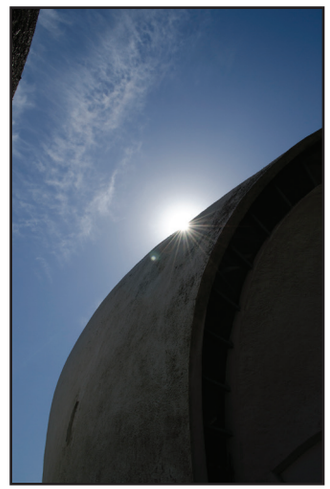




Figure 5.9: Section cut out of 180° panorama showing Baikova Cemetery and Crematorium.

Figure 5.10: Photos in and around crematorium.





Crematorium

Graves & niches
inserted into terrace





Famine Memorial, Kyiv, Ukraine.

A short walk from the Lavra Cave Monastaries, the Kyiv Famine Memorial lies tucked away in a hillside. This memorial can easily be overlooked as the entrance is merely a black rock covered ramp descending into the hillside.

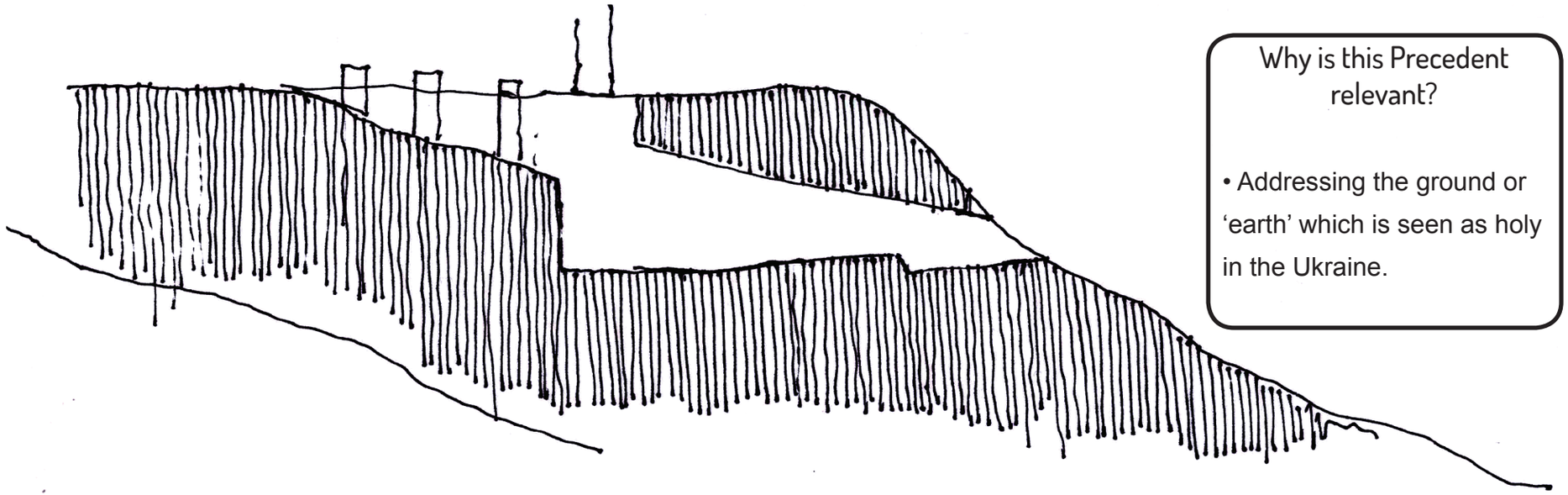
Again, the connection with earth in the context is strengthened as the memorial's main space exists inside the hill where names are projected against the walls of the circular room. Furthermore the room is filled with books that appear as thick dictionaries, all the while filled with names of people who succumbed to the famine.

On the outside of the memorial as you move through the hill, thousands of victims' names are engraved in terraces running down the hill.



Figure 5.11: Famine Memorial entrance.

Opposite page:
Figure 5.13: Famine Memorial exit and engraved terraces.



Why is this Precedent relevant?

• Addressing the ground or ‘earth’ which is seen as holy in the Ukraine.

Figure 5.12: Rough site sketch of section through hill of Famine Memorial.



5.2 PRECEDENT OF LANDSCAPE REACTION

Gamma, Factory Fifteen

Animation company Factory Fifteen, created a fictional short film about Pripyat and a program to clean the radioactivity. Sure, the film has a tongue in cheek story line, but the creators show a significant understanding of the landscape and the effect radioactivity has on it. Furthermore they show an in depth understanding of the polemics of inserting architecture into a radioactive landscape.

In the film, structures float over the landscape and drop biological organisms across the site. These organisms then clean the landscape from radioactivity. In the film the organisms do fail to clean the landscape, but for the purposes of this study the theory behind this film will be investigated (Factory Fifteen, 2011: online).

As mentioned in the polemics section of this paper, the radioactivity is radiated from the ground. The creators addressed this concept by having a structure float above the landscape (Factory Fifteen, 2011: online), thus eliminating any contamination from the ground.



Figure 5.14: Scene from Gamma showing floating structure

(Factory Fifteen, 2011: online).

Figure 5.15: Scene from Gamma showing floating structure

(Factory Fifteen, 2011: online).



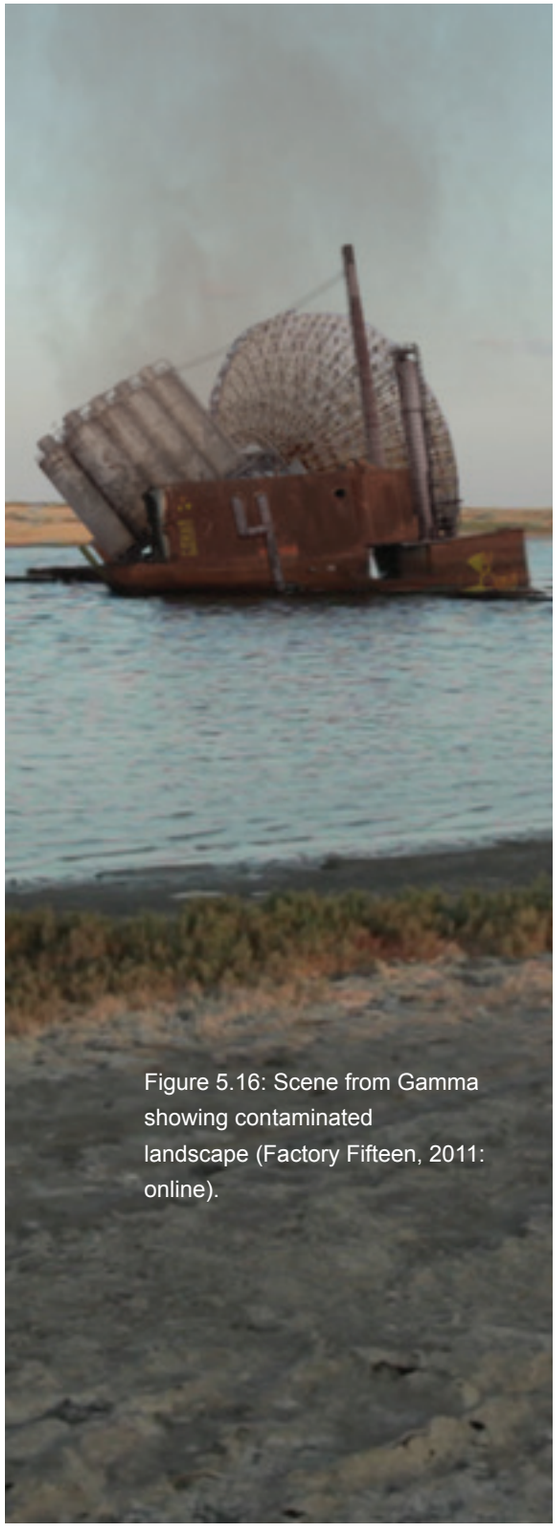


Figure 5.16: Scene from Gamma showing contaminated landscape (Factory Fifteen, 2011: online).

Why is this precedent relevant?

- Reacting to radioactivity polemics
- Tectonic expression relative to context

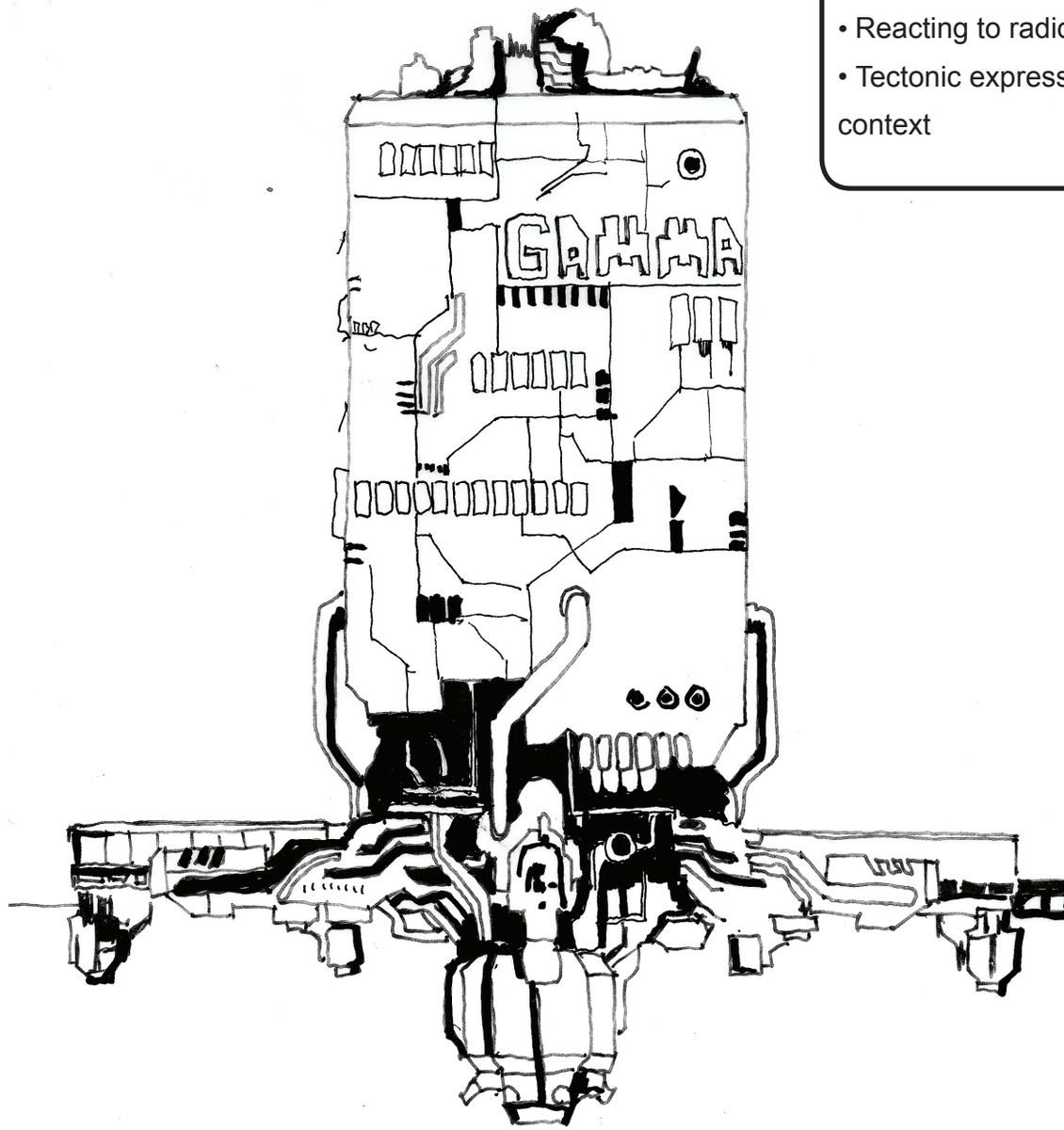


Figure 5.17: Sketch of floating structure. Derived from Factory Fifteen (2011:online).

Zombie Fallout Shelter

Although a fictional competition project, this design does hold some significance for building in a radioactive landscape. The designer in this case created a void in the landscape that would house a structure to keep him/her safe from zombies during a zombie apocalypse (Jarz, 2011: online).

The removal from the contaminated ground line combined with the creation of *place* in a hostile environment proves to be highly relevant when building in a radioactive landscape.

Why is this precedent relative?

- Removed from ground line
- Questioning realm of architecture
- Hostile environment

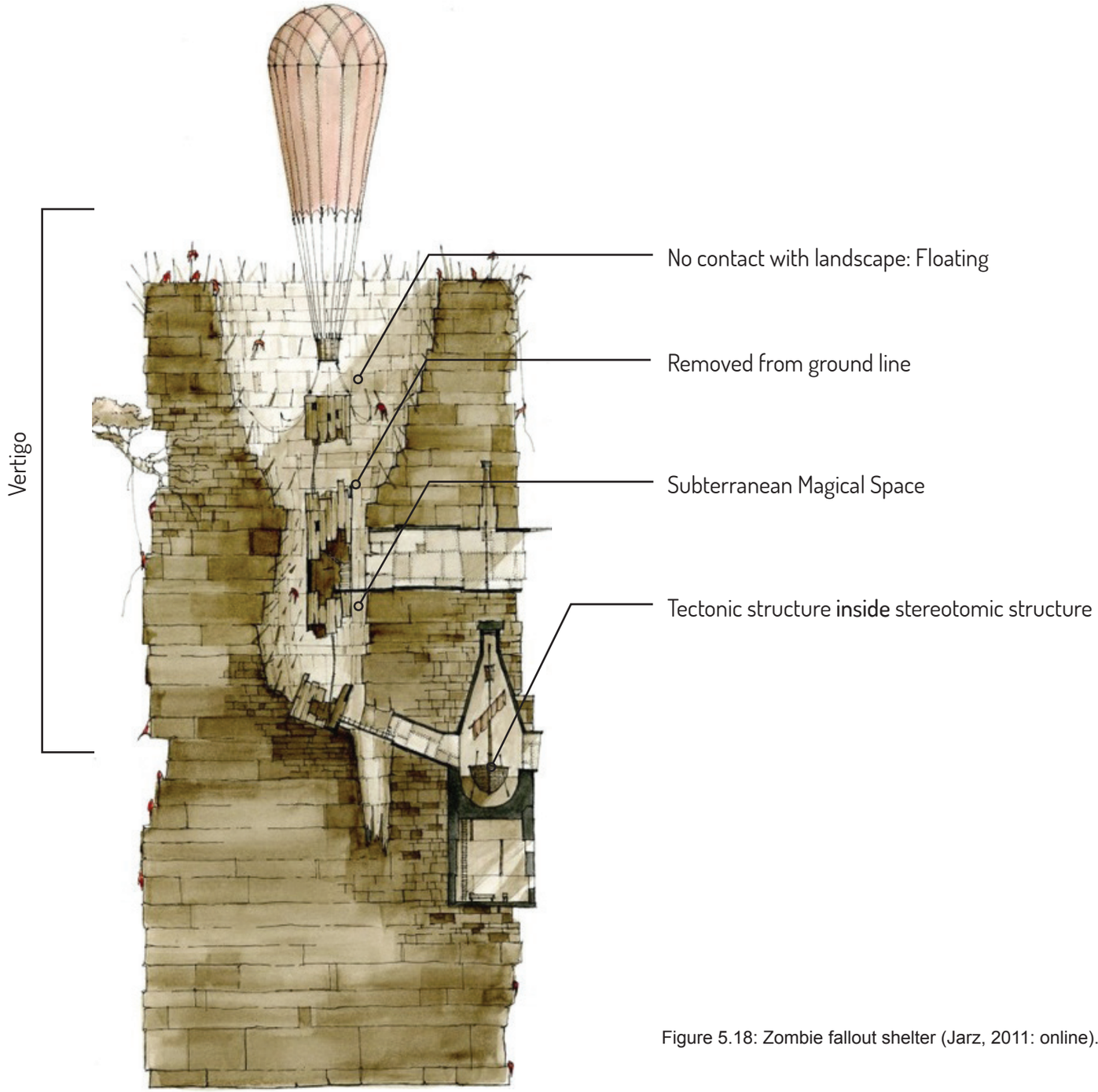


Figure 5.18: Zombie fallout shelter (Jarz, 2011: online).

Hanging Cemetery of Baghdad

Designed as a speculative project, the Hanging Cemetery of Baghdad by the firm Naja & de Ostos questions how architecture respond to extreme hostile environments. The clashes in the Middle East happen away from our immediate reality and thus we only perceive it through television and other media. Through this physical removal, a fictional existence of Baghdad starts to exist in our consciousness. This project reveals itself through this 'fictional' medium and questions the understanding and interpretation of this structure (Jackowski & De Ostos, 2013: online).

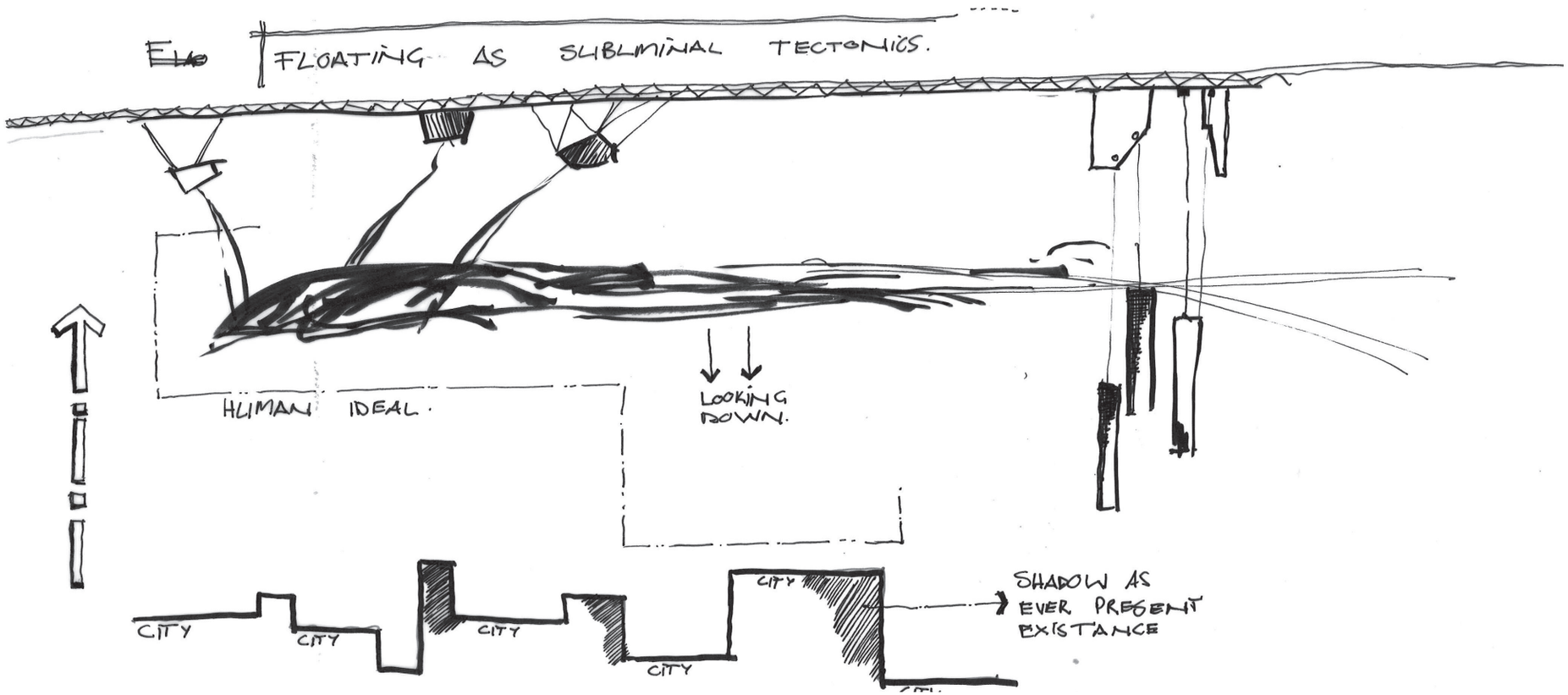
Furthermore the author is of the opinion that a structure that removes itself from the ground line, actually heightens the conscious existence of a ground line. Through the shadows on the ground, this structure makes itself visible in a space that it doesn't physically occupy.

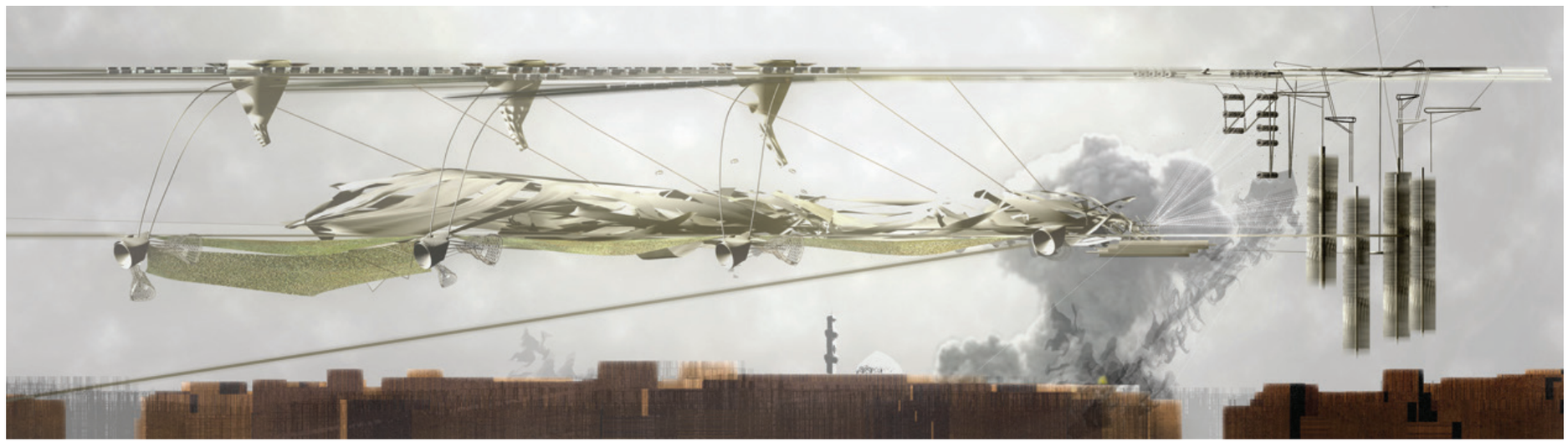
Why is this precedent relative?

- Cosmic spiritual connection
- Removed from ground line
- Questioning realm of architecture

Opposite page top:
Figure 5.19: Analysis of the Hanging Cemetery of Baghdad. Sketch derived from Jackowski & De Ostos (2013: online).

Opposite page bottom:
Figure 5.20: Hanging Cemetery of Baghdad (Jackowski & De Ostos, 2013: online).


FLOATING AS SUBLIMINAL TECTONICS.
HUMAN IDEAL.
LOOKING DOWN.
CITY
CITY
CITY
CITY
CITY
SHADOW AS EVER PRESENT EXISTANCE



Aeroliving Labs, Lebbeus Woods

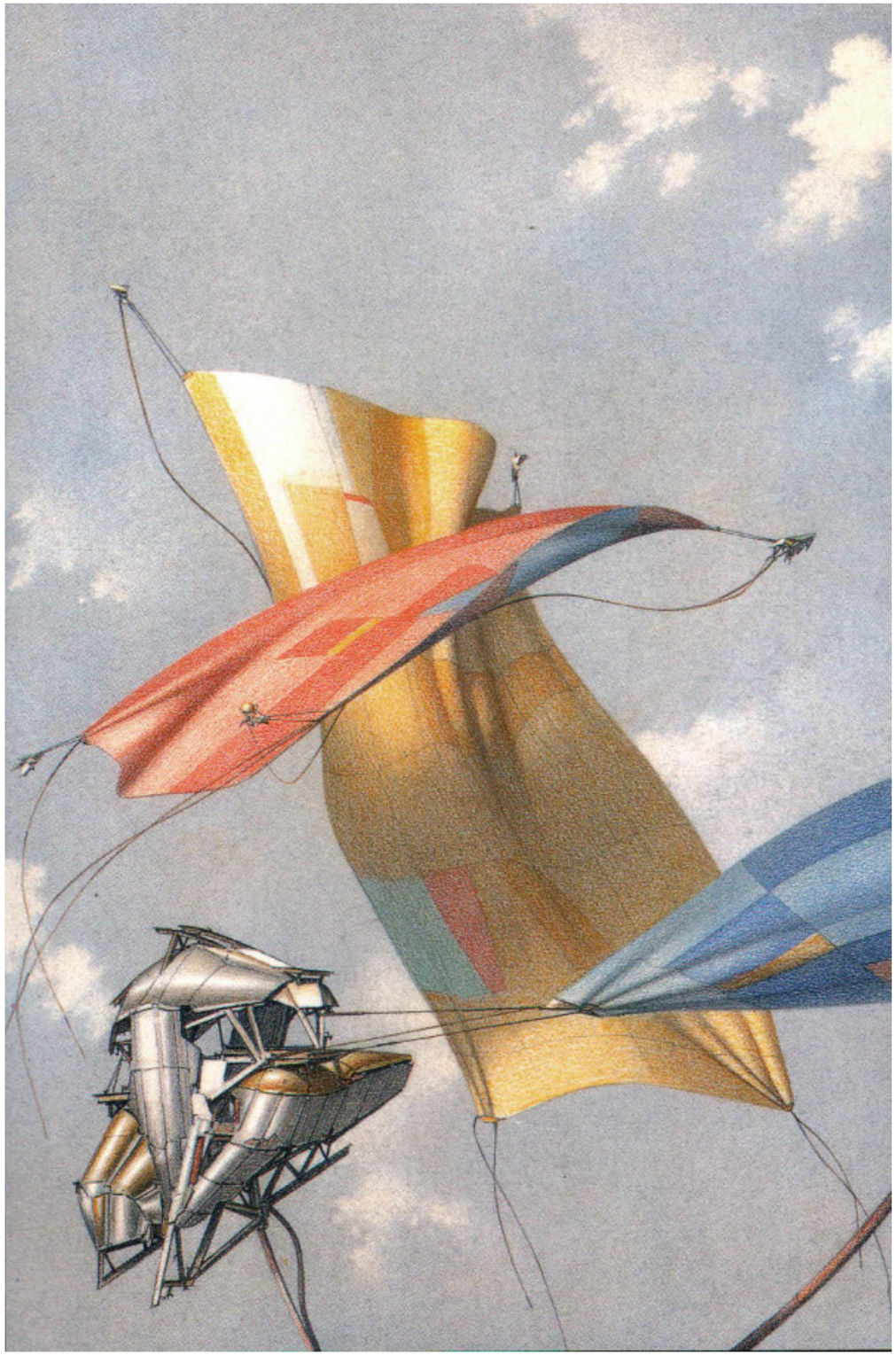
An experimental project by architect Lebbeus Woods, namely Aeroliving-labs, investigates the concept of flight in buildings. Woods (2009: online) describes the project as 'A community of heavier-than-air, experimentally inhabited structures in the air over Paris. The moving structures drag immense sheets of light-weight material through the earth's magnetosphere, generating static electricity in sufficient quantities to levitate them silently, much like a mag-lev train, but freely in the open sky.'

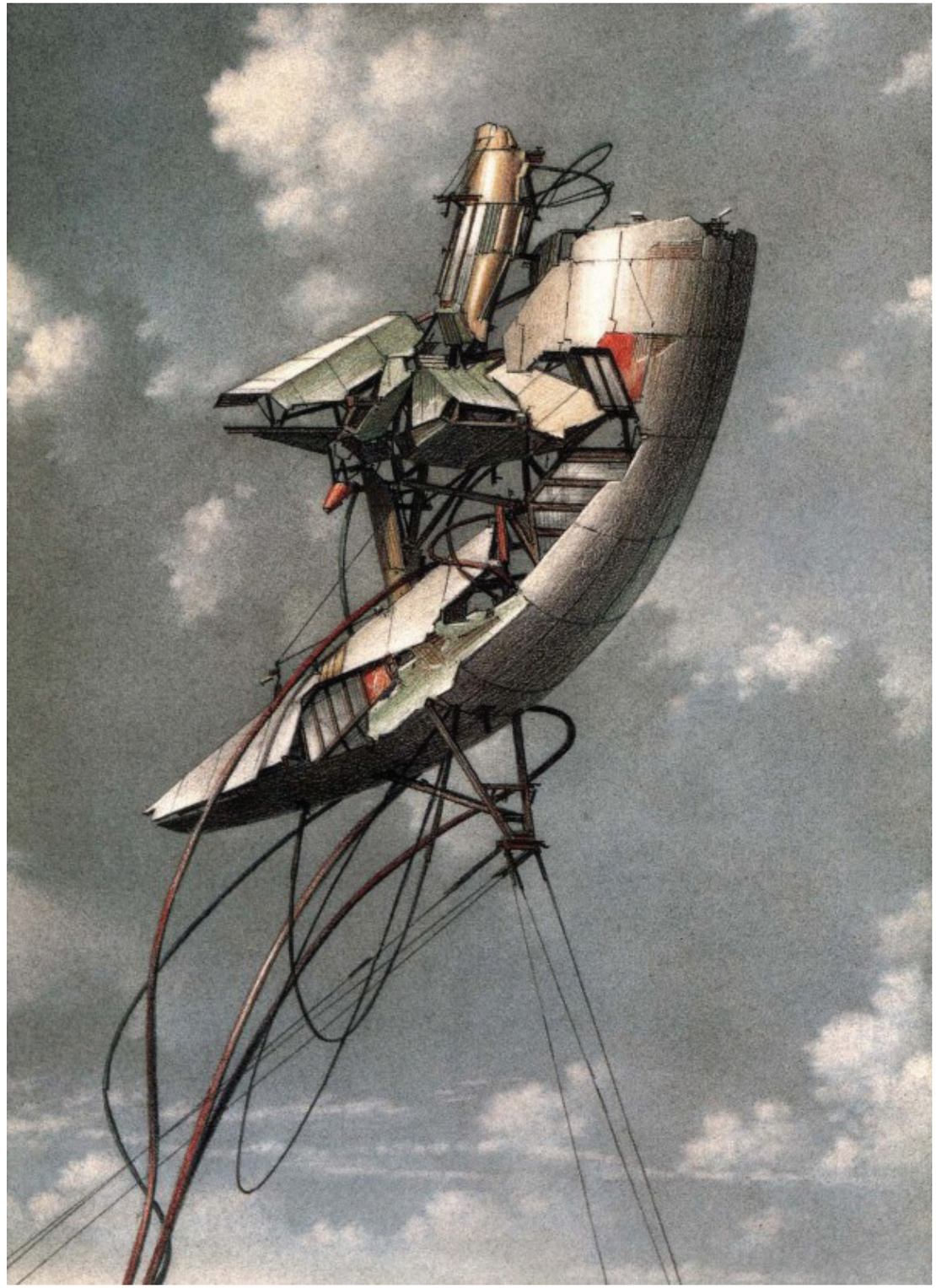
The project is highly experimental, but guides the designer into the realm of speculative architecture with regards to incorporating flight into a building, or parts thereof. The concept of flight coupled with the concept of underground spaces, addresses both the theoretical underpinning as well as the project polemics. A fearful mixing of extreme opposites through flight juxtaposed against the subterranean, propels this project deep into the territory of the uncanny.

Why is this precedent relative?

- Flight as a mysterious space.
- Cosmic spiritual connection
- Removed from ground line

Opposite page:
Figure 5.21 & 5.22: Aeroliving-labs (Woods, 2009: online).







6

BRAIN WORK | роботи мозку

"During the day we lived in the new place, and at night we lived at home – in our dreams."

– Resettler (Alexievich, 2006: 69)



6.1 INSPIRATION ON SITE



REACTOR

Morphology

Tectonic Expression

Containment

Out of Control



FEAR OF GROUND

Seperation

Invisibility

Monstrous

Beauty



ABSENCE

Separation

Rapture

Utopia

Memory



IDENTITY

Personality

Expression

Social Engineering

Soviet Zeitgeist

Figures 6.1 - 6.4: Photographs depicting inspiration found upon visiting the Exclusion Zone.

6.2 MATERIAL DECAY

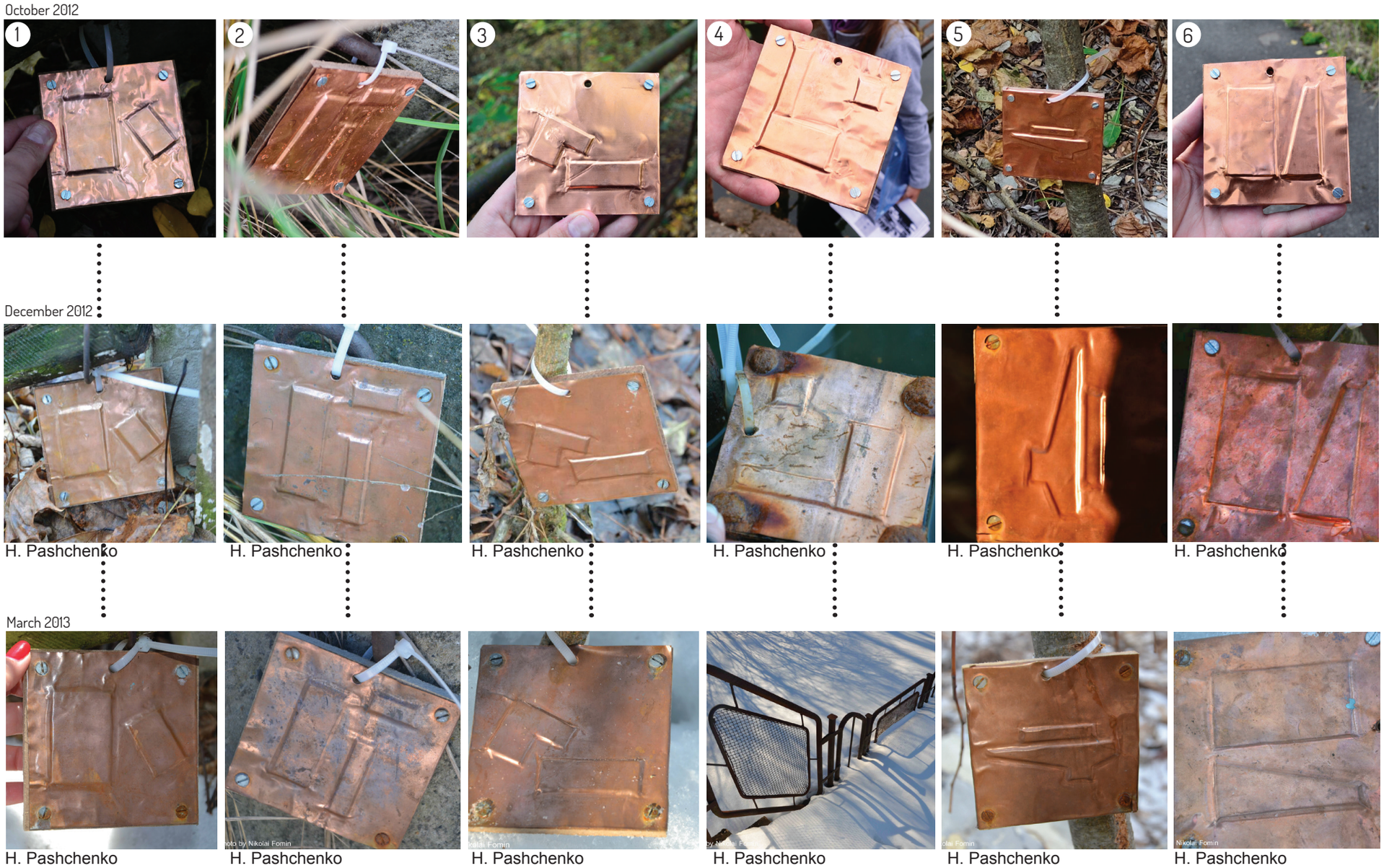
Upon visiting the Exclusion Zone in October 2012, copper samples were placed in various locations around the Exclusion Zone to study material decay in a radioactive landscape (Figure 6.5). Chernobyl Inter Inform employee and government appointed guide to the Exclusion Zone, Helen Pashchenko, was kind enough to track and send periodical photos of the samples. The result was a duality of decay, with some samples entering a state of preservation with very little decay (Figure 6.6: Sample 5), while on the contrary, other samples decayed at an alarming pace and even showed growth on the sample (Figure 6.6: Sample 4).

Material use and its decay in the landscape proved to be very inspirational and lead to various influences in the design.



Figure 6.5: Placement locations of copper samples.

Figure 6.6: Collection of photographs of copper samples through their various stages of decay.



6.3 TOUCHSTONE

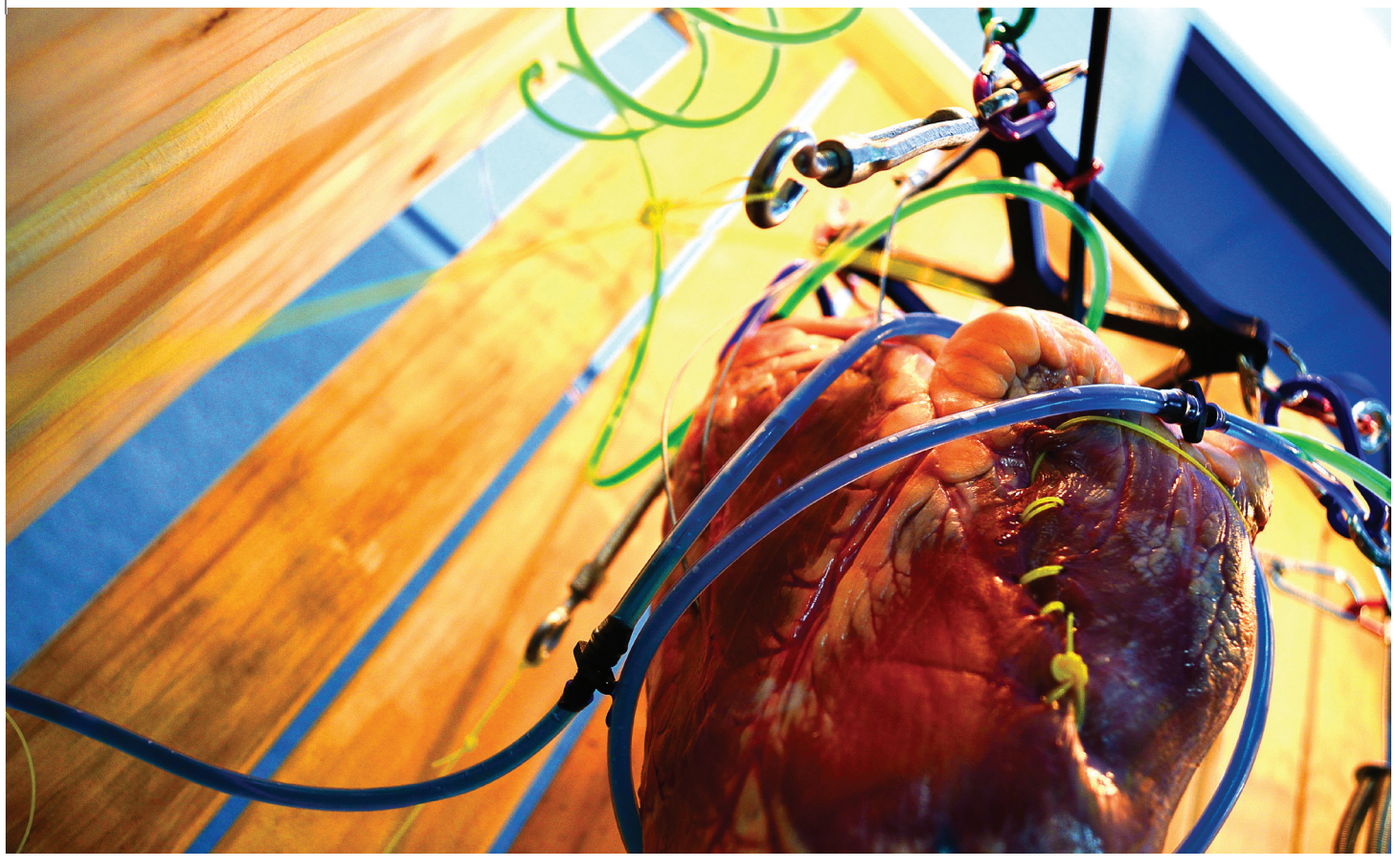
The touchstone as an early generator of an idea, aimed to communicate the Frankensteinian idea of how life can be artificially inserted into a dead object or being. The touchstone explored how a mechanistic (man-made) object can be inserted into a deceased (natural) tissue in order to communicate life. A mechanistic spring-powered 'muscle' (Figure 6.10) was surgically inserted into an actual cow heart (Figure 6.7). This muscle would then expand and contract inside the heart giving the impression that this heart is in fact beating. Fluids were further pumped through the heart to communicate that the *heart* is also 'pumping'. The resultant being is thus a hybrid of man-made and natural tissue where the boundaries between the two are blurred to the individual.

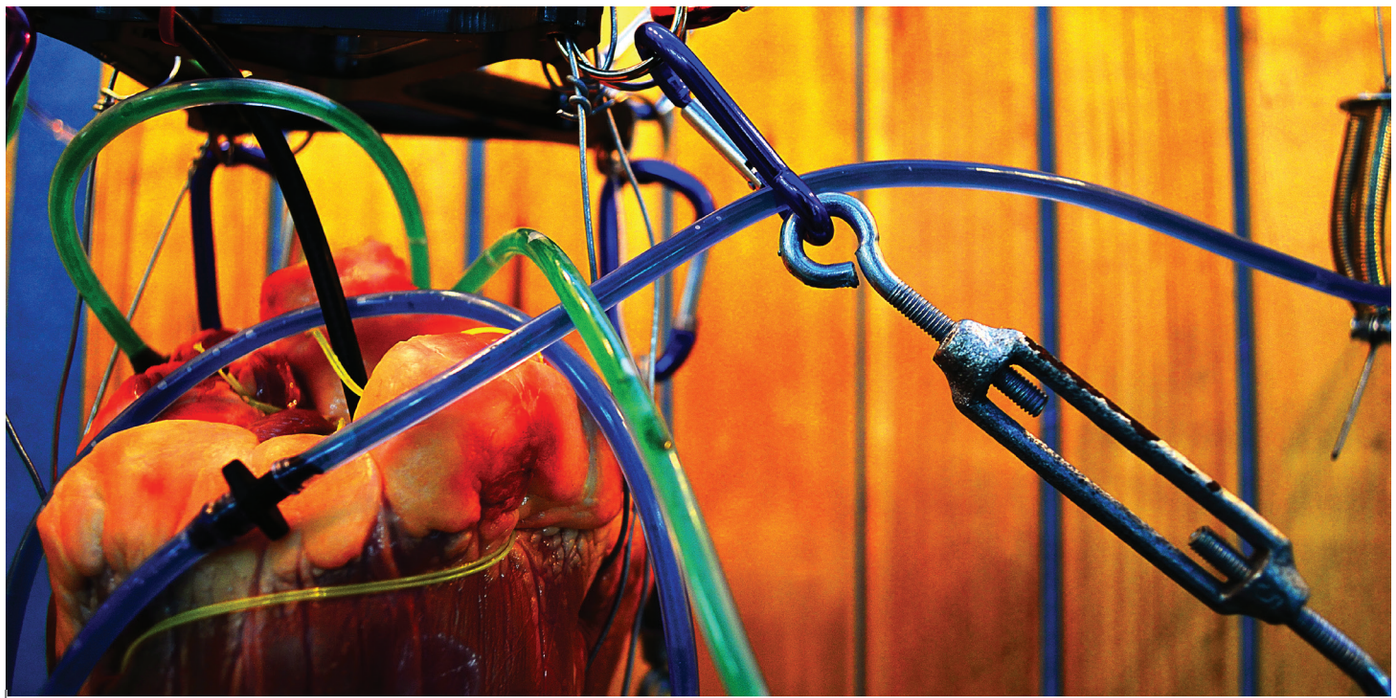
On presentation, the touchstone was received with mixed emotions, ranging from awe at this beating heart, to sheer terror and mostly a combination of both. These reactions manifested again the concept of duality and polarity, found in the context.

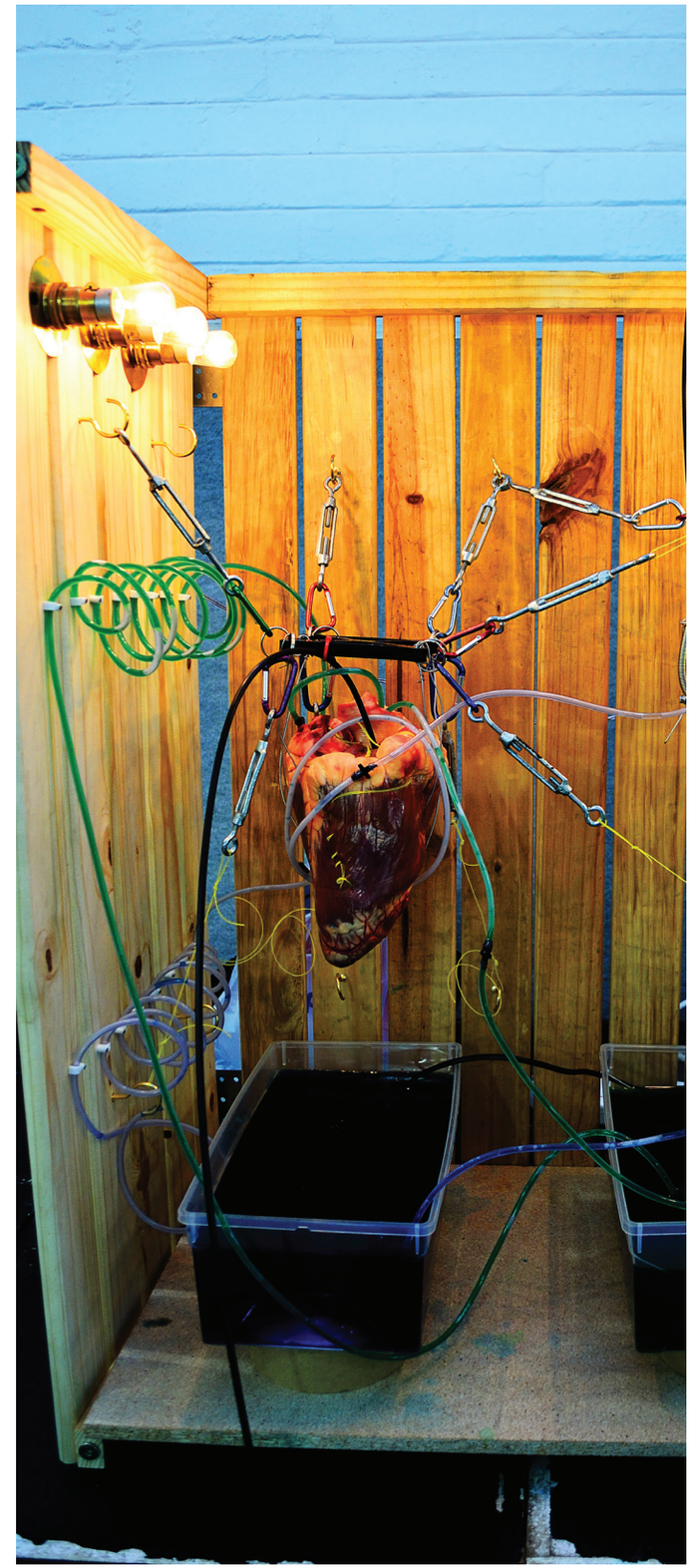




Opposite page:
Figure 6.7: Montage of photographs of the touchstone.







6.4 MACABRE TECTONICS

In the town of Pripyat there exists a deafening silence due to the fact that there is no ambient noise produced by daily urban life. Through the silence there does exist two extreme opposing sounds that are amplified by the lack of background noise. One of the sounds exist in the extreme natural realm, while the other exist in the extreme man-made realm. Wind rustles through the leaves and around abandoned corners while your Geiger counter rhythmically beeps in you hand. It is uncanny that the pulsing sound so often associated with life, indicates death in this landscape.

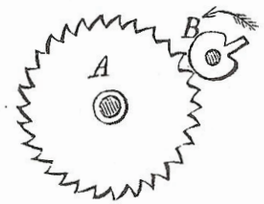
The tectonics of the building will be designed in such a way as to communicate that the building possesses a subtle life of its own, thus creating a seemingly *living* being. Tectonic and mechanical expression (Figure 6.8 - 6.10) will be used in order to have the user interact with the building, but also to have the building interact with its environment. Sound emitted by different interactions and reactions to a building will be employed to have the building communicate life. The building will crack, tap, sheer and rip.

Opposite page left:
Figure 6.8: Unusual and creative mechanical movements (Brown, 2005: 22).

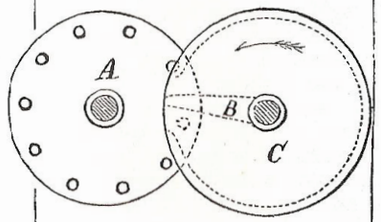
Opposite page top right:
Figure 6.9: Tectonic expression through mixture of biological and synthetic matter.

Opposite page bottom right:
Figure 6.10: The artificial beating ‘muscle’ that was inserted into the heart.

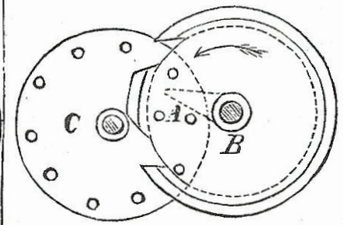
69



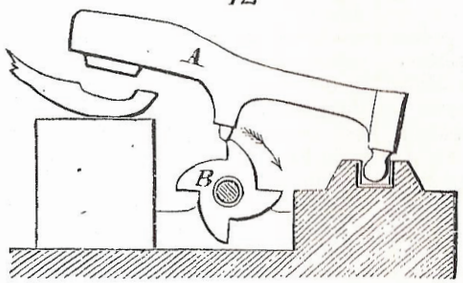
70



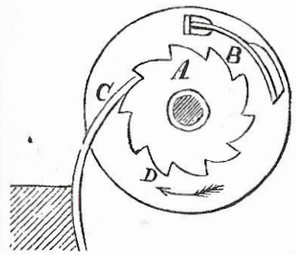
71



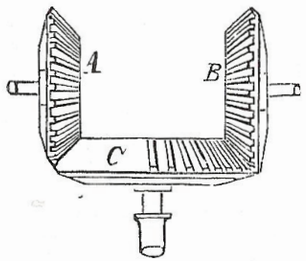
72



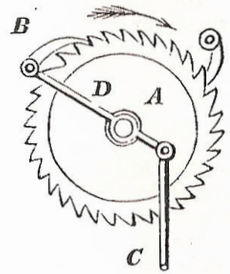
73



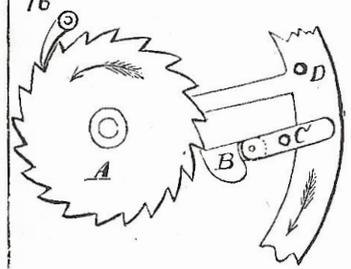
74



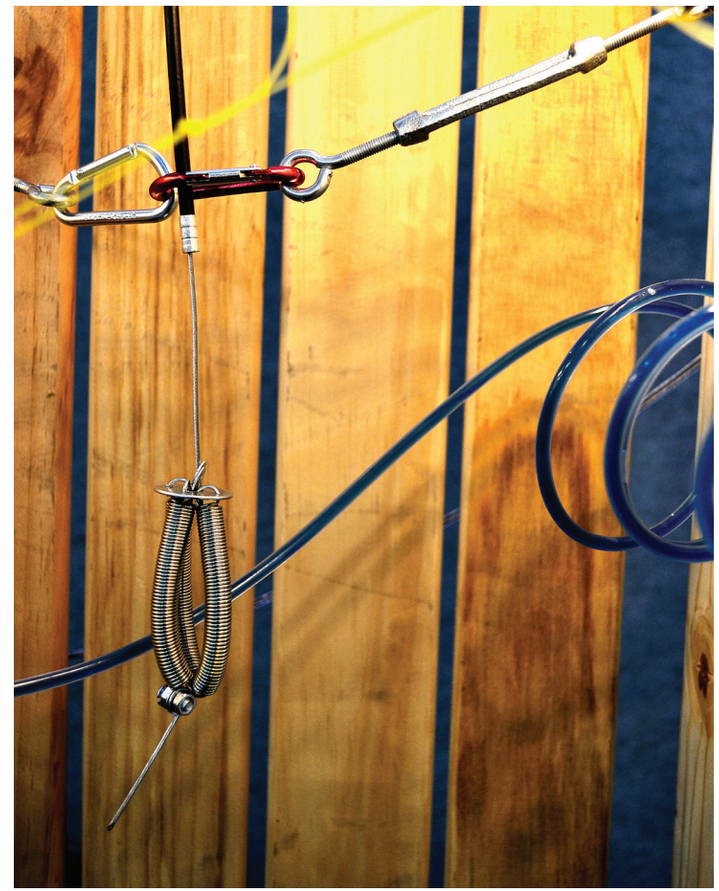
75



76







6.5 ABSTRACTED UMBRELLA

As an investigation into tectonic expression and its relevance to spatial modification, the Abstracted Umbrella was a project in the BOW module that forms part of the B.Arch.Stud (Hons) degree at the University of the Free State. Dynamic spatial morphology was researched in how the structure can move as a whole through a space, while changing its own internal spatial configuration in the process.

The structure is balanced on a suspended line with a counter weight at the bottom, ensuring a very low centre of gravity. From there the main head of the structure runs on the length of the line on two wheels that in turn are connected to a set of gears. These gears have built-in extrusions that activate triggers when they reach a certain position of rotation. Fabric roof systems -of which only one of four is installed in the photos- are spring loaded and connected to the previously stated triggers. As the structure runs on the line, the spring loaded roofs will be released at certain points, opening up the structure and thus changing the spatial morphology as it moves through a space.

Although the dynamic spatial morphology is planned and predicted by the designer, the element of surprise and apprehension communicates a sense of *motility* as opposed to *mobility*. The apprehended motility coupled with the balancing act, creates an uncanny sense of *tension*, juxtaposed by *curiousness* as to the outcome. In short, the user is conflicted by suspense and curiosity.

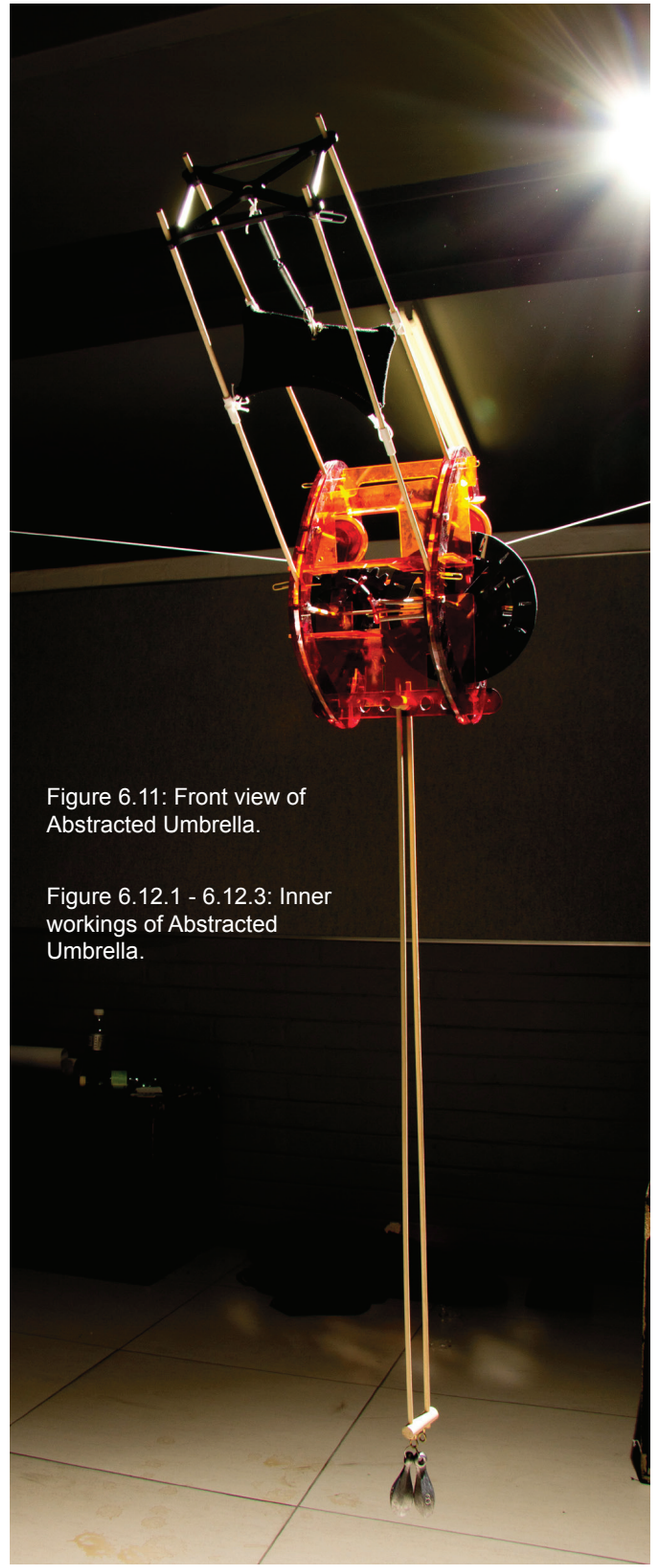


Figure 6.11: Front view of Abstracted Umbrella.

Figure 6.12.1 - 6.12.3: Inner workings of Abstracted Umbrella.



Figure 6.12.1

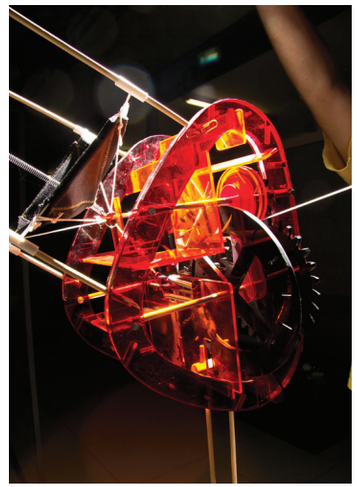


Figure 6.12.2

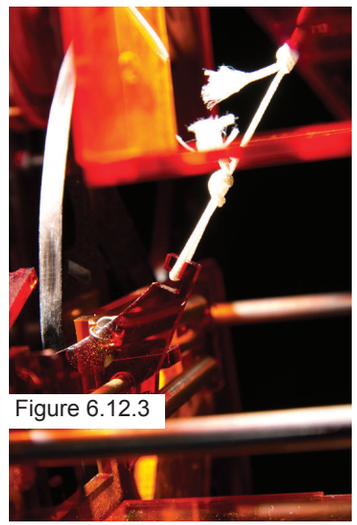


Figure 6.12.3

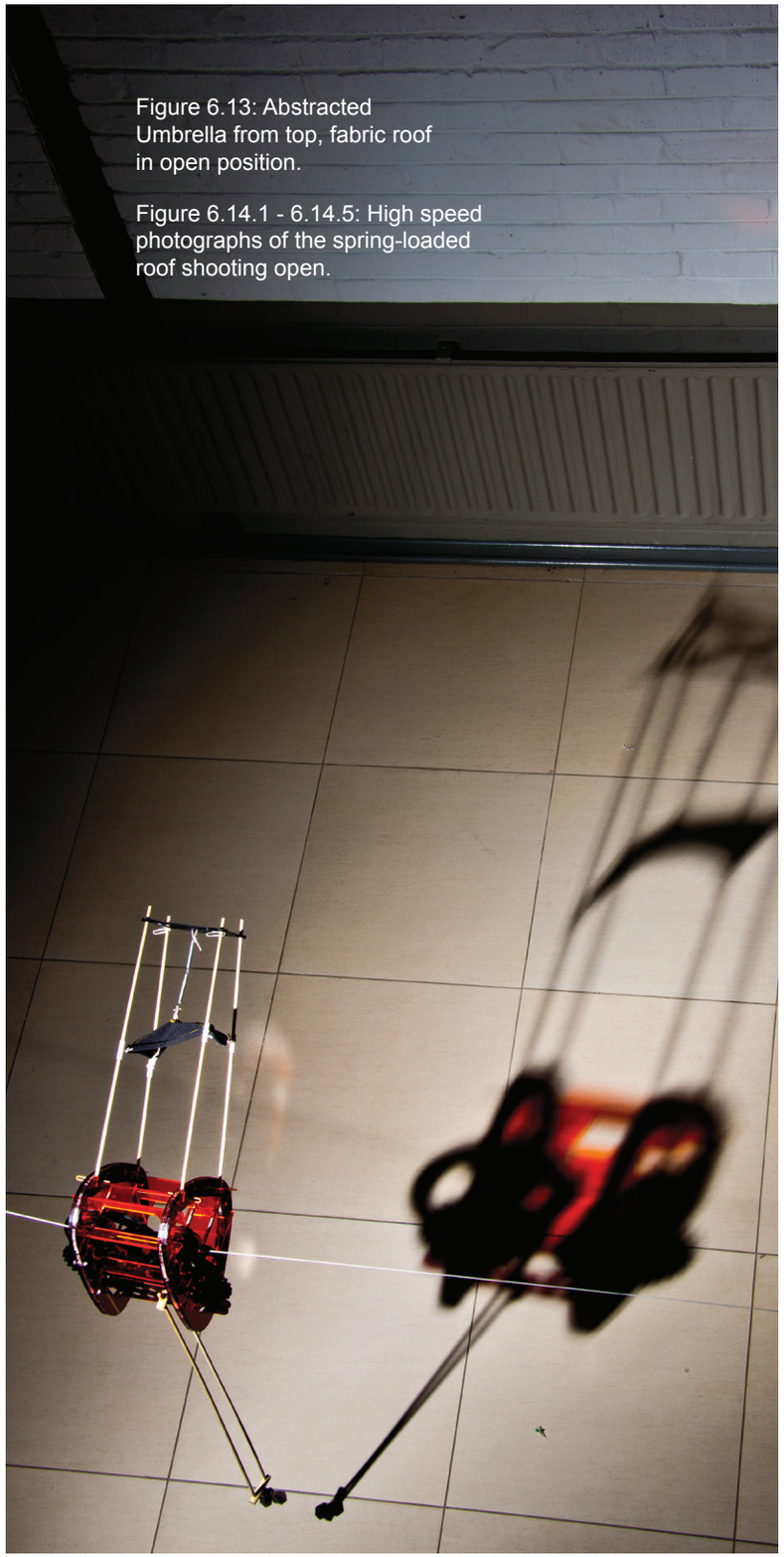


Figure 6.13: Abstracted Umbrella from top, fabric roof in open position.

Figure 6.14.1 - 6.14.5: High speed photographs of the spring-loaded roof shooting open.

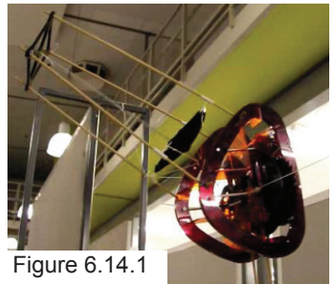


Figure 6.14.1

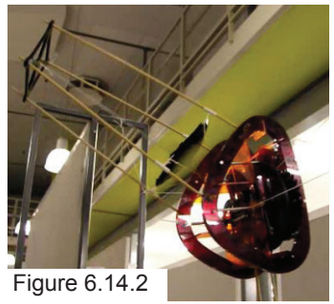


Figure 6.14.2

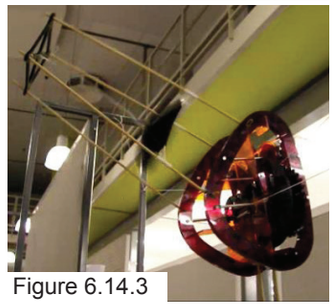


Figure 6.14.3

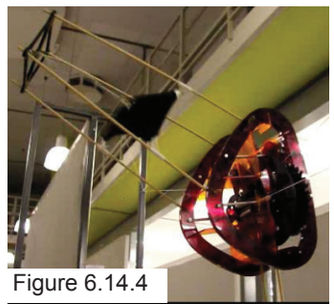


Figure 6.14.4

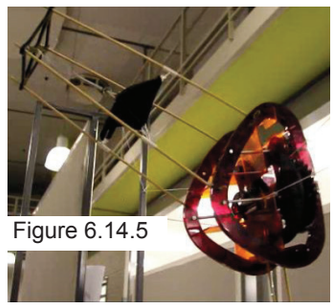


Figure 6.14.5

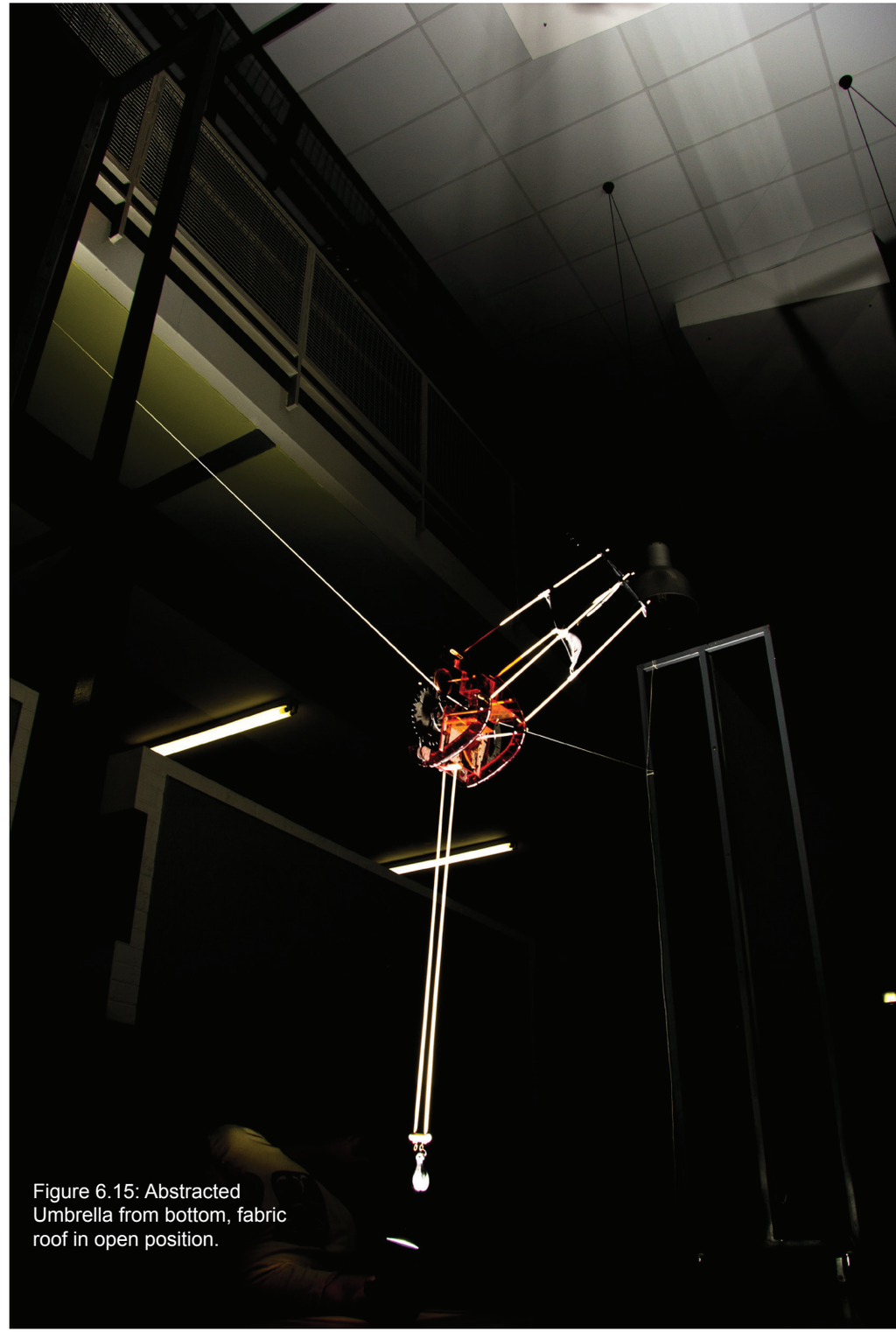
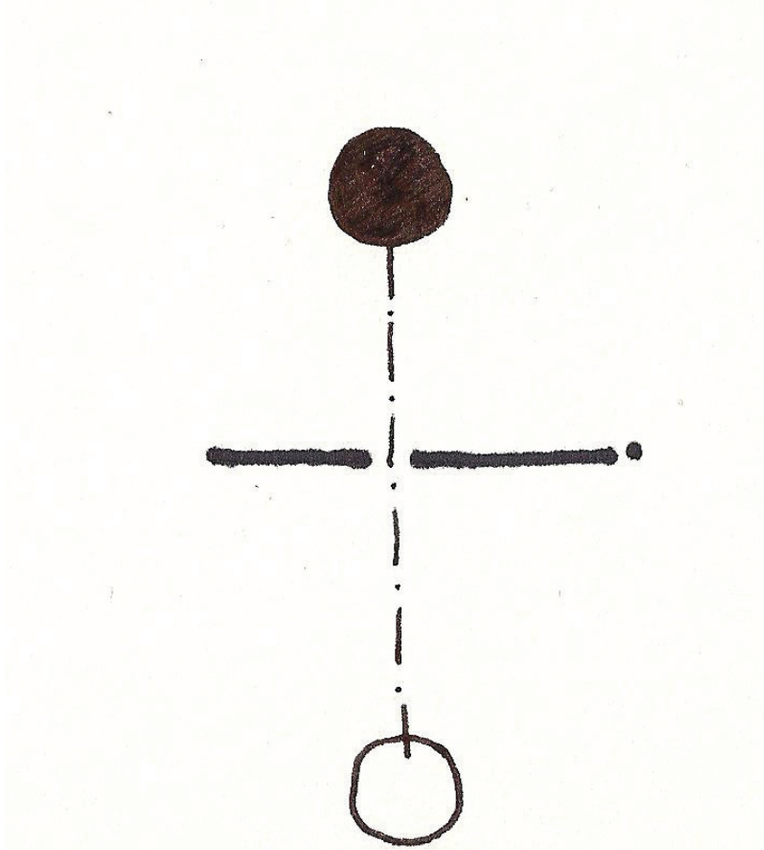


Figure 6.15: Abstracted Umbrella from bottom, fabric roof in open position.

6.6 SKETCH PROCESS

The ‘thinking hand’ approach was taken in the early stages of the design process, in the sense that it doesn’t matter what is drawn, as long as ink gets transferred to paper. Furthermore, it will be noticed that the early drawings are extremely abstract with no relation to context or scale. They are merely manifestations of thought and theoretical discourse at a specific stage in the design process.



Refer back to Figure 4.9

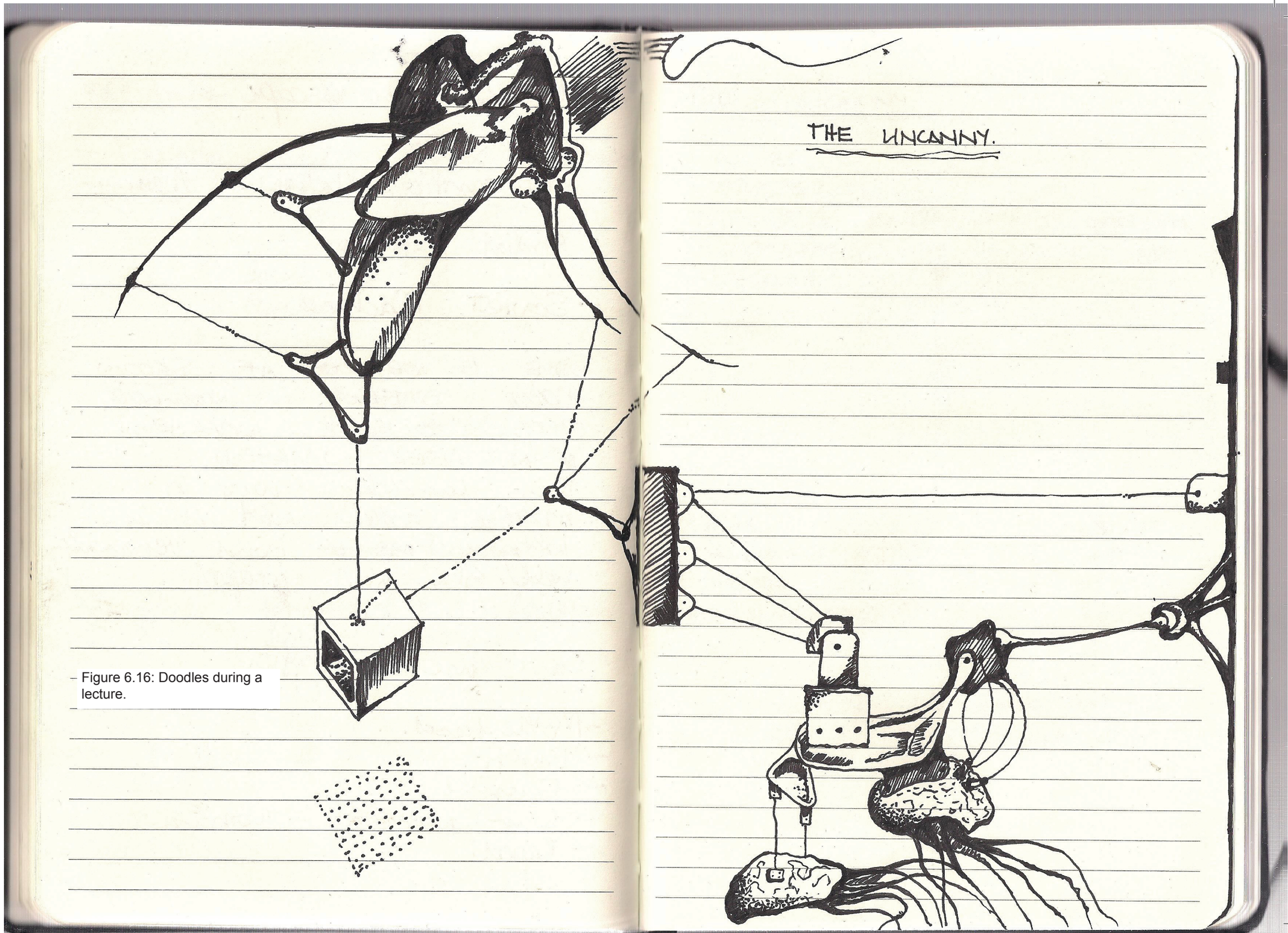
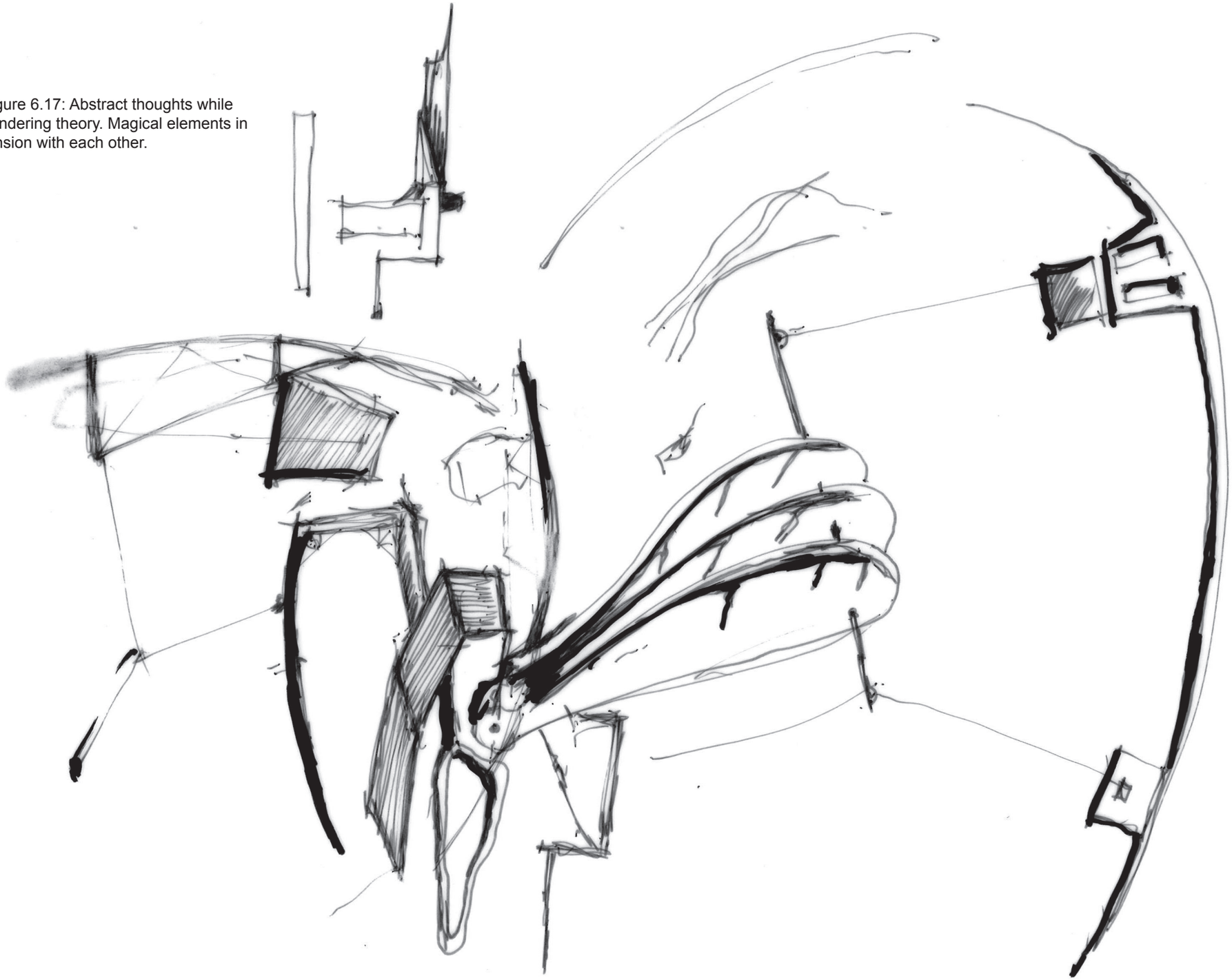


Figure 6.16: Doodles during a lecture.

Figure 6.17: Abstract thoughts while pondering theory. Magical elements in tension with each other.



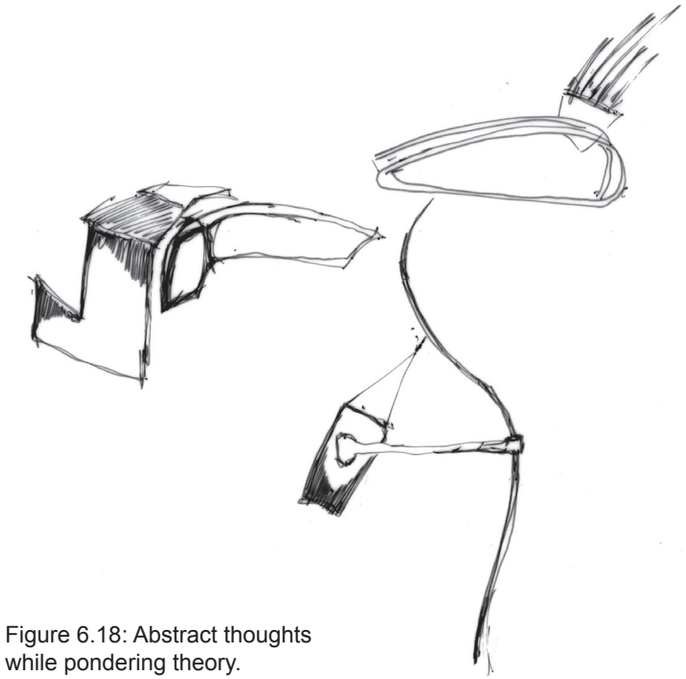


Figure 6.18: Abstract thoughts while pondering theory.

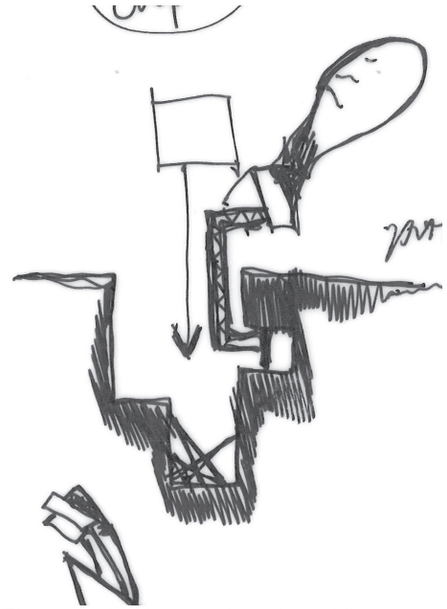


Figure 6.19: Abstract thoughts while pondering theory. Relation to earth and sky

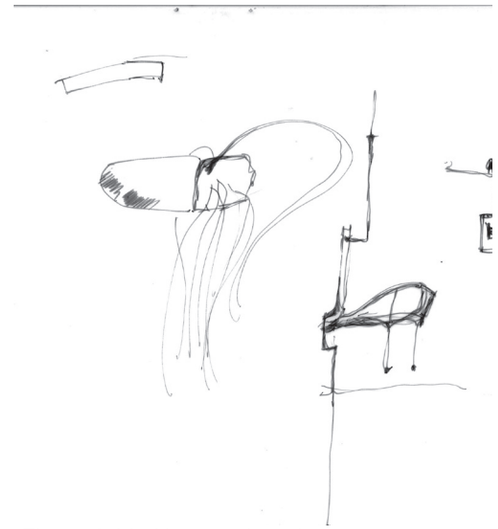


Figure 6.20: Abstract thoughts while pondering theory.

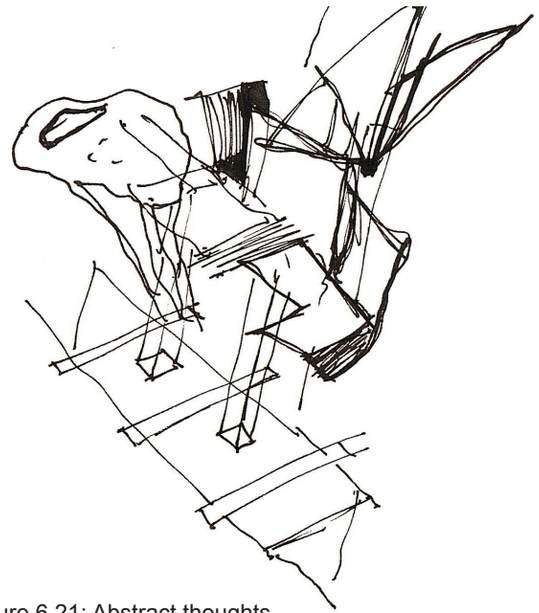


Figure 6.21: Abstract thoughts during lecture.

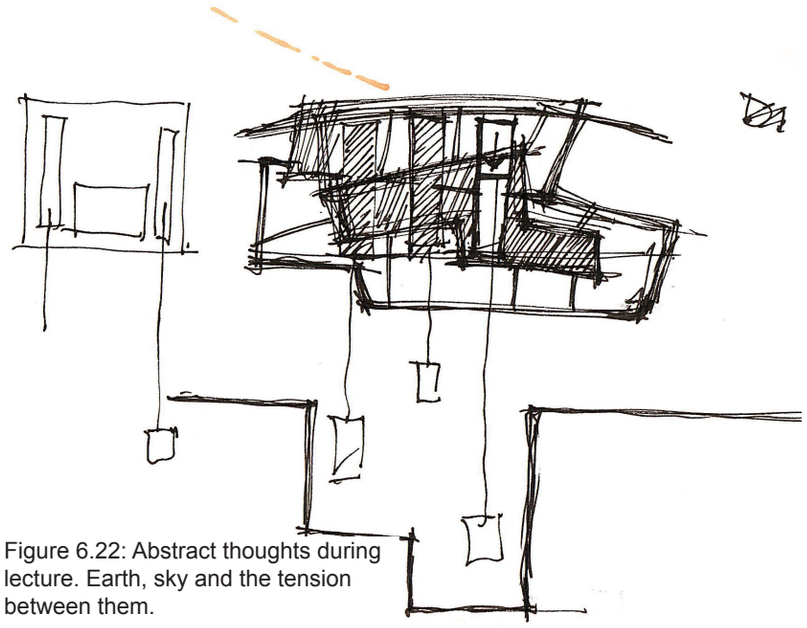


Figure 6.22: Abstract thoughts during lecture. Earth, sky and the tension between them.

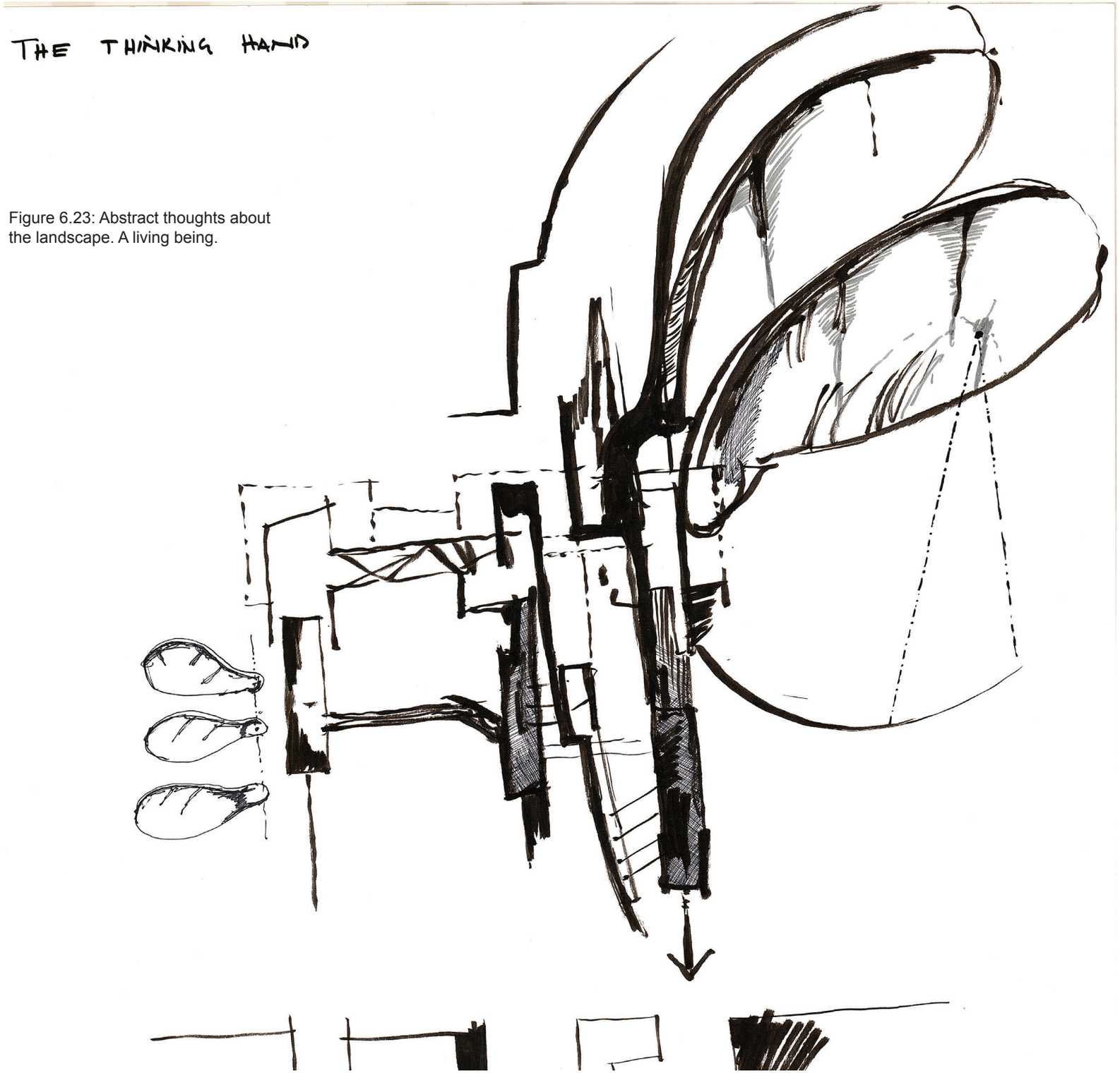


Figure 6.23: Abstract thoughts about the landscape. A living being.

Figure 6.24: Abstract thoughts about the landscape and a mutation.

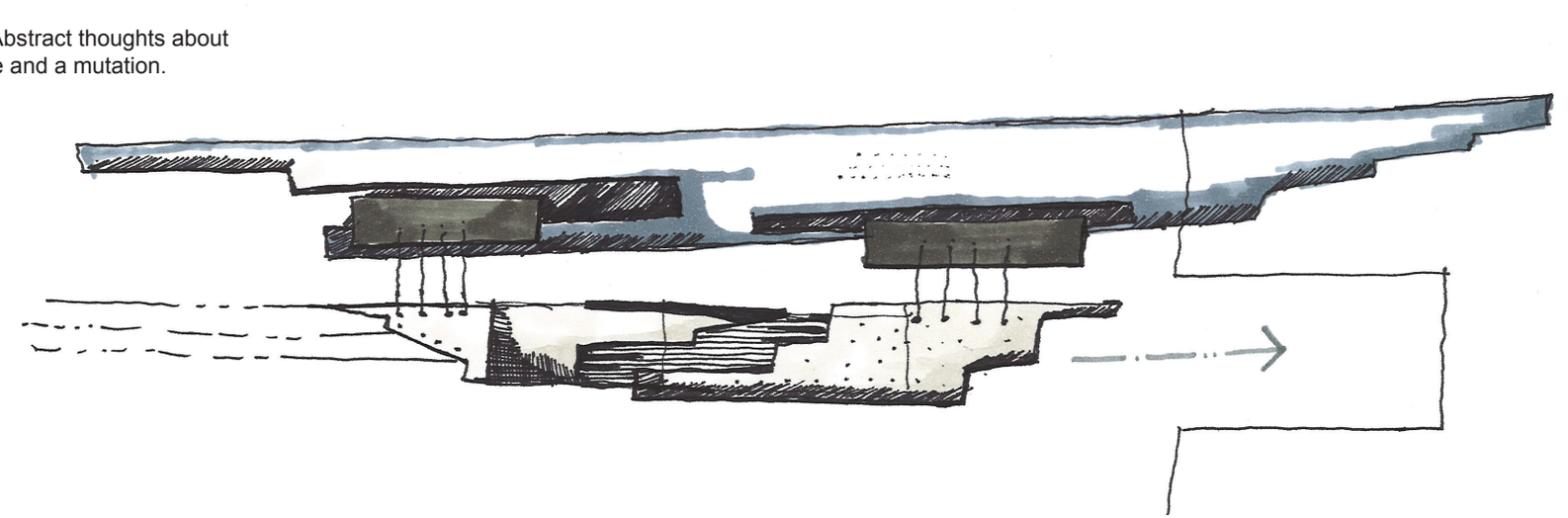
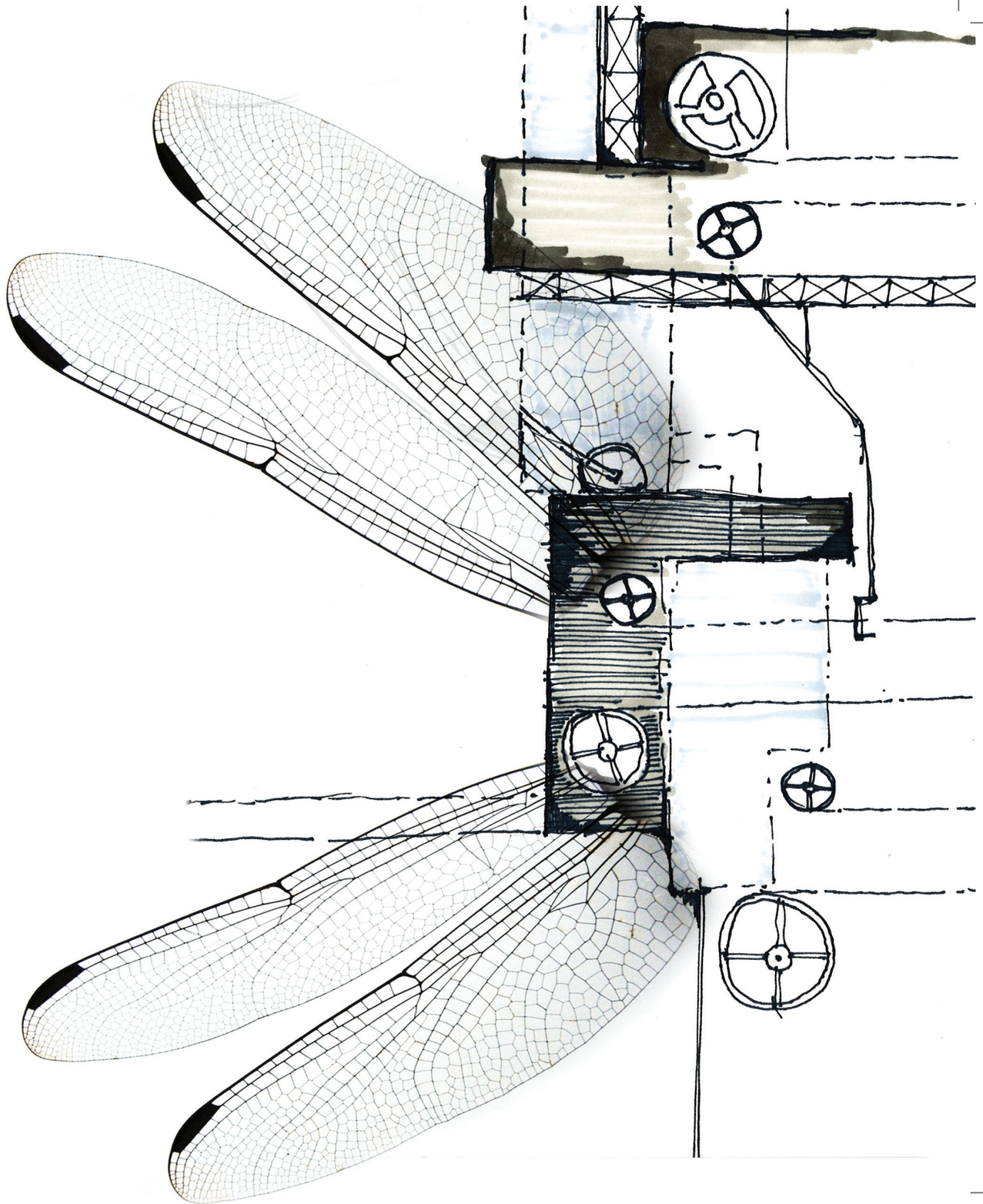
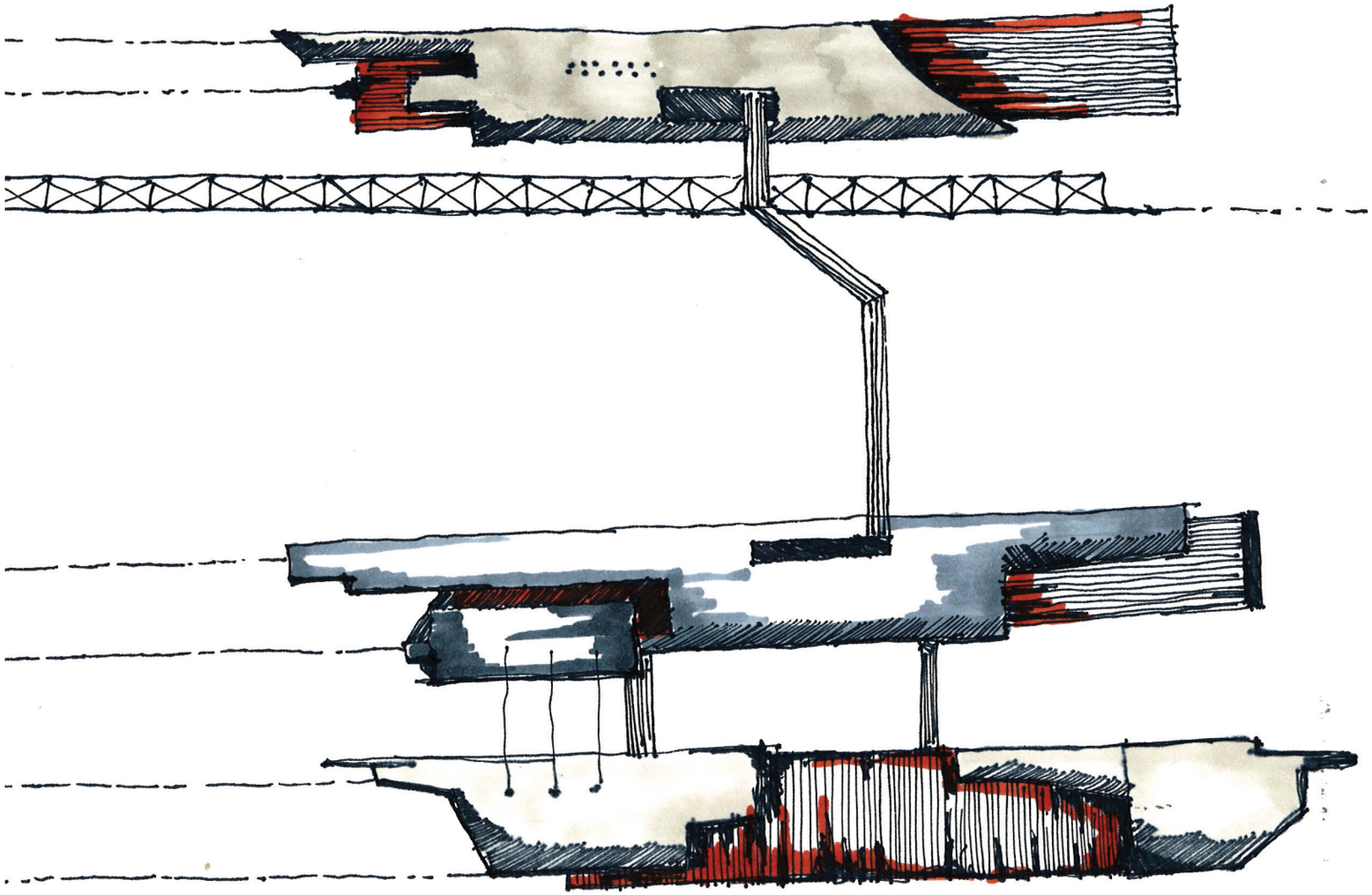




Figure 6.25: Abstract thoughts about the magical landscape. Sketch made in Kyiv after second visit to the Exclusion Zone.

Figure 6.26: Abstract thoughts about the landscape as a being with persona. Also relation of flight vs digging.





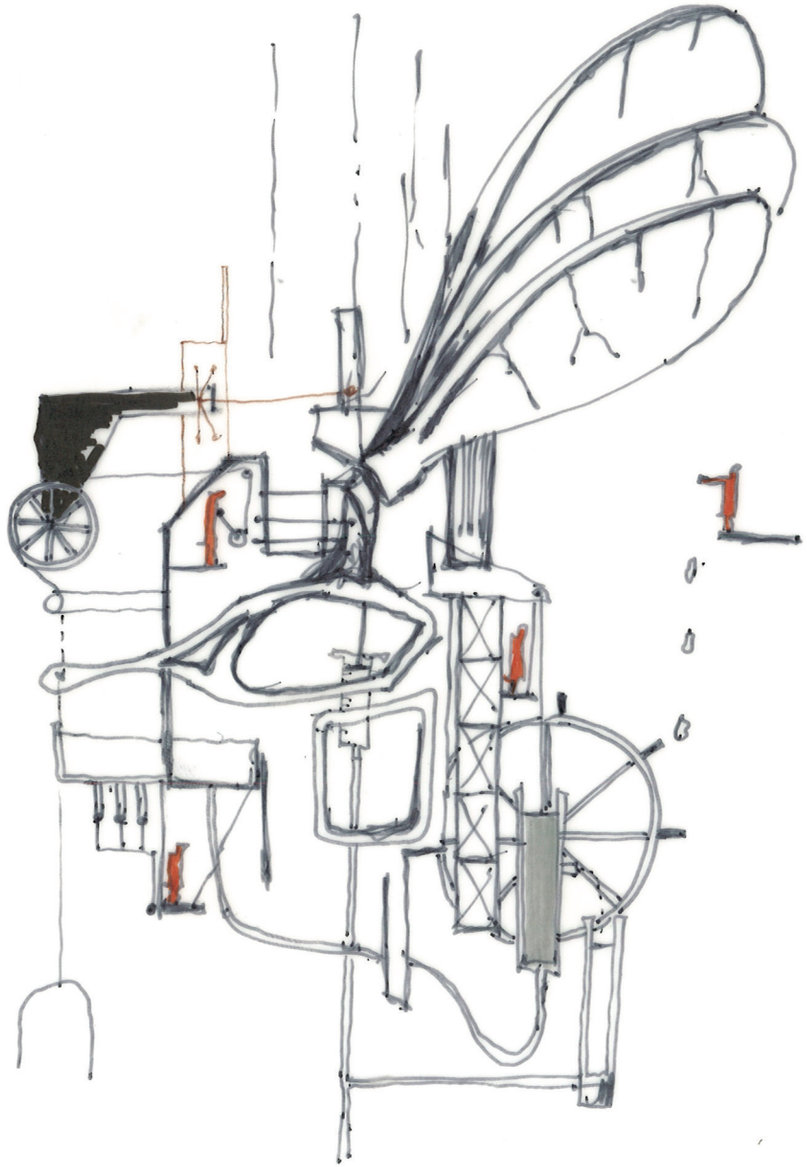


Figure 6.27: Abstract thoughts about the landscape and tectonic expression.

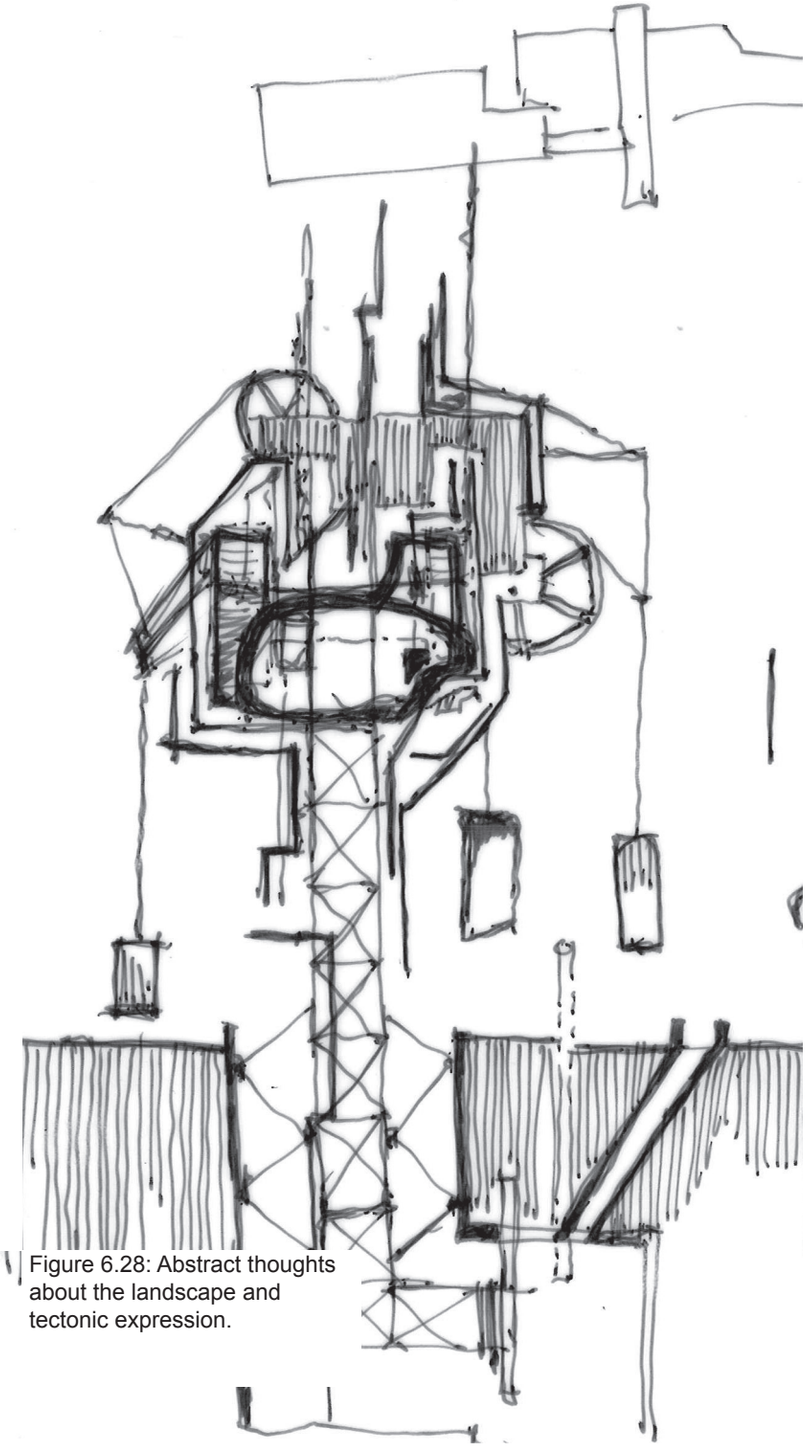


Figure 6.28: Abstract thoughts about the landscape and tectonic expression.

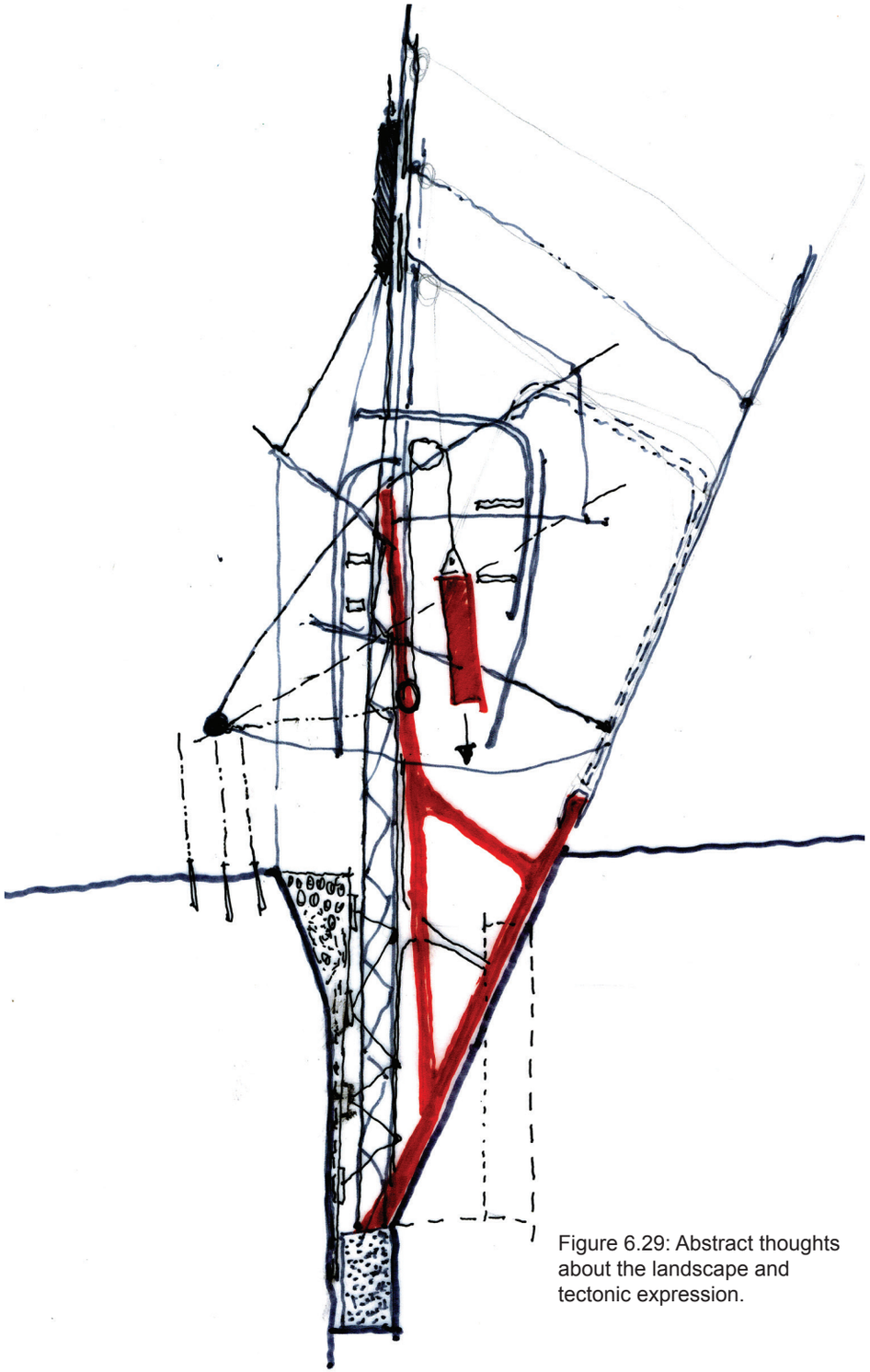


Figure 6.29: Abstract thoughts about the landscape and tectonic expression.

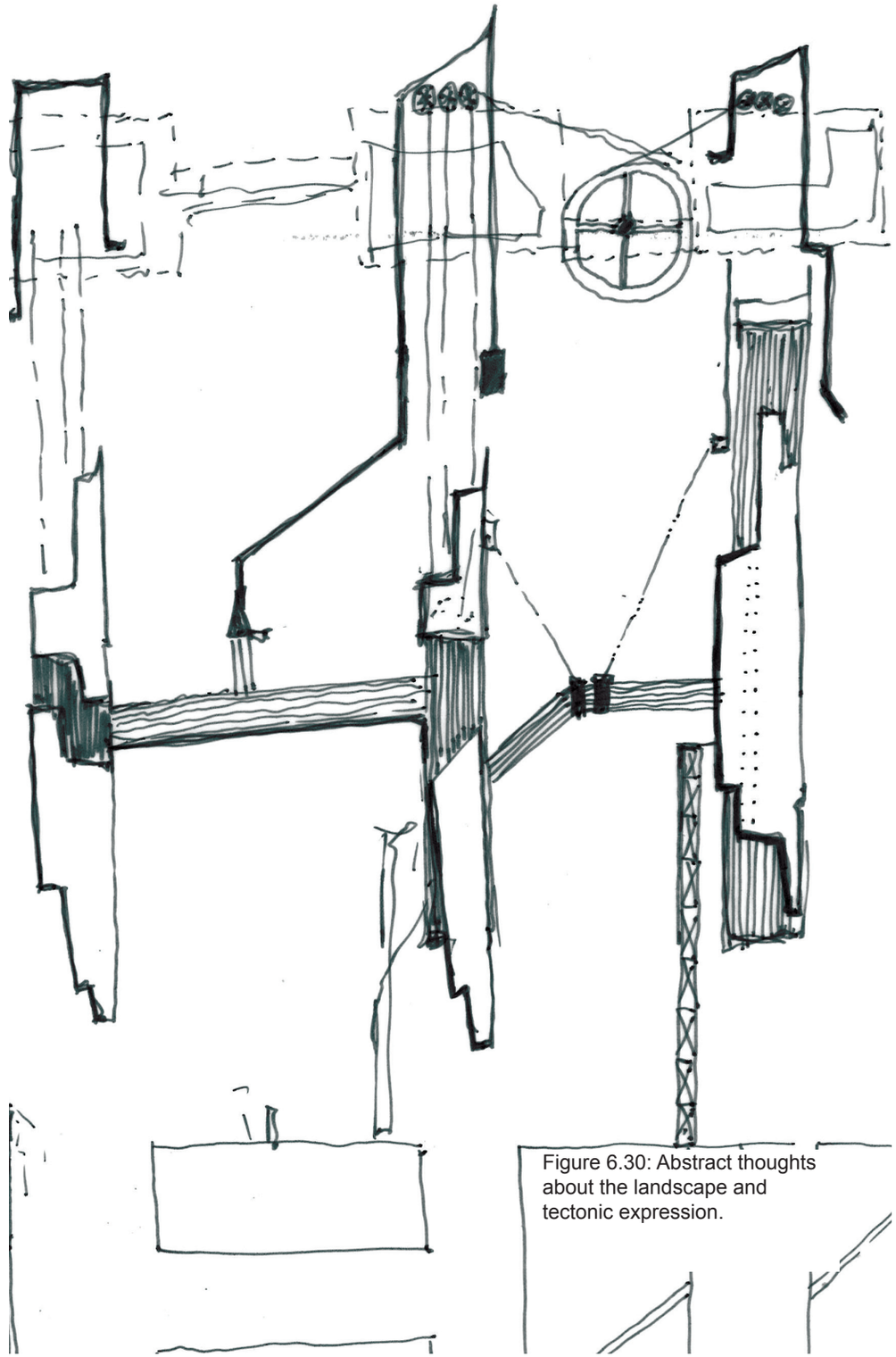
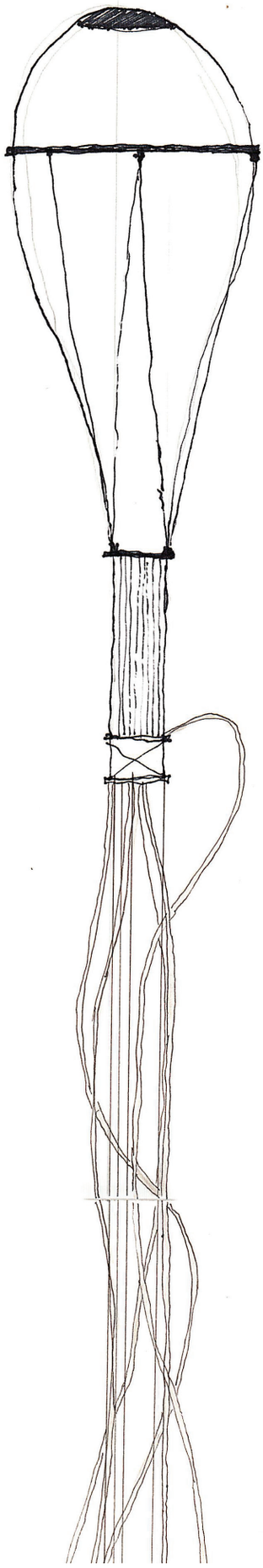


Figure 6.30: Abstract thoughts about the landscape and tectonic expression.

BRAIN WORK | SKETCH PROCESS



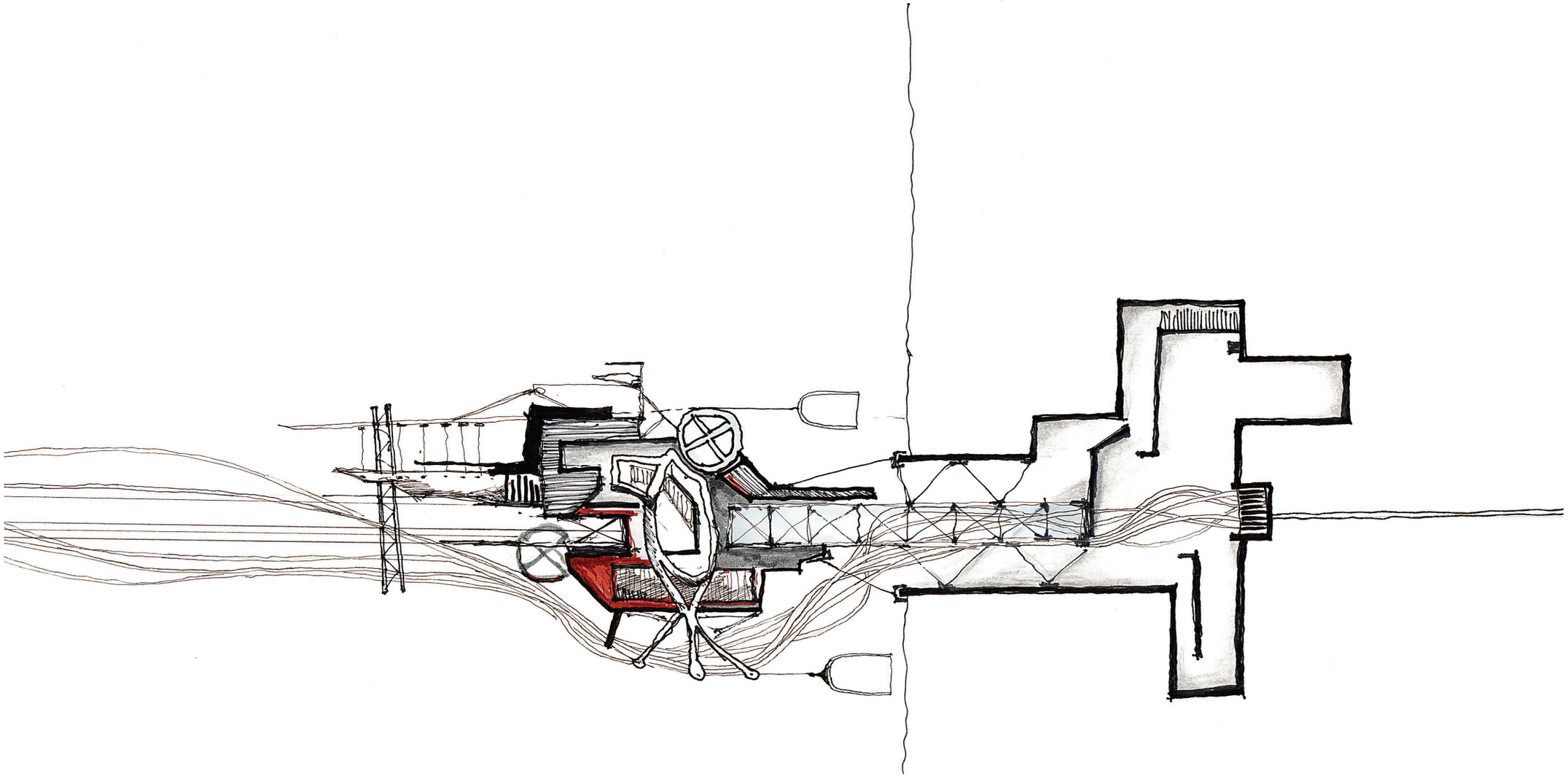


Figure 6.31: More refined idea of flight vs dig. Earth vs sky. Man vs magical.

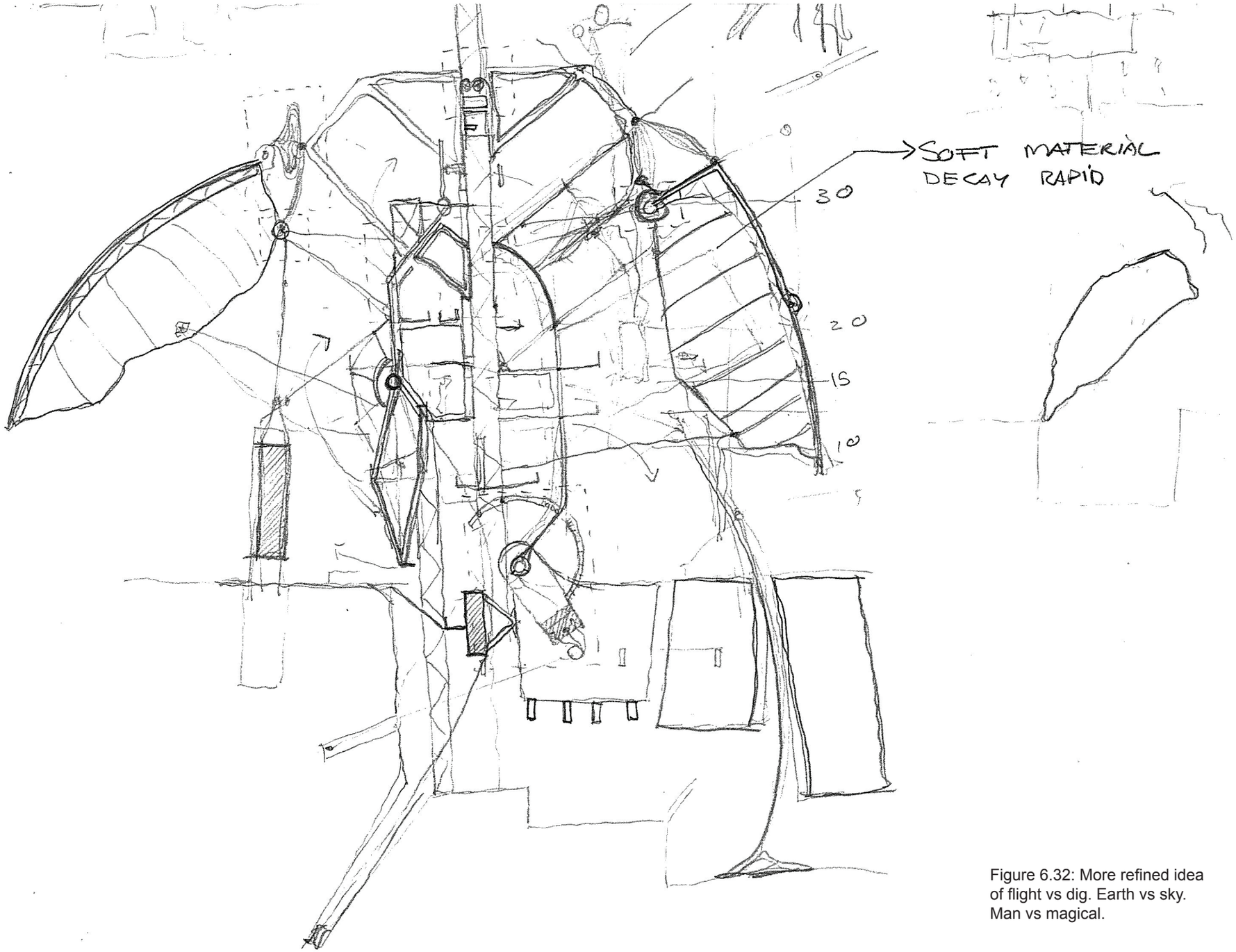


Figure 6.32: More refined idea of flight vs dig. Earth vs sky. Man vs magical.

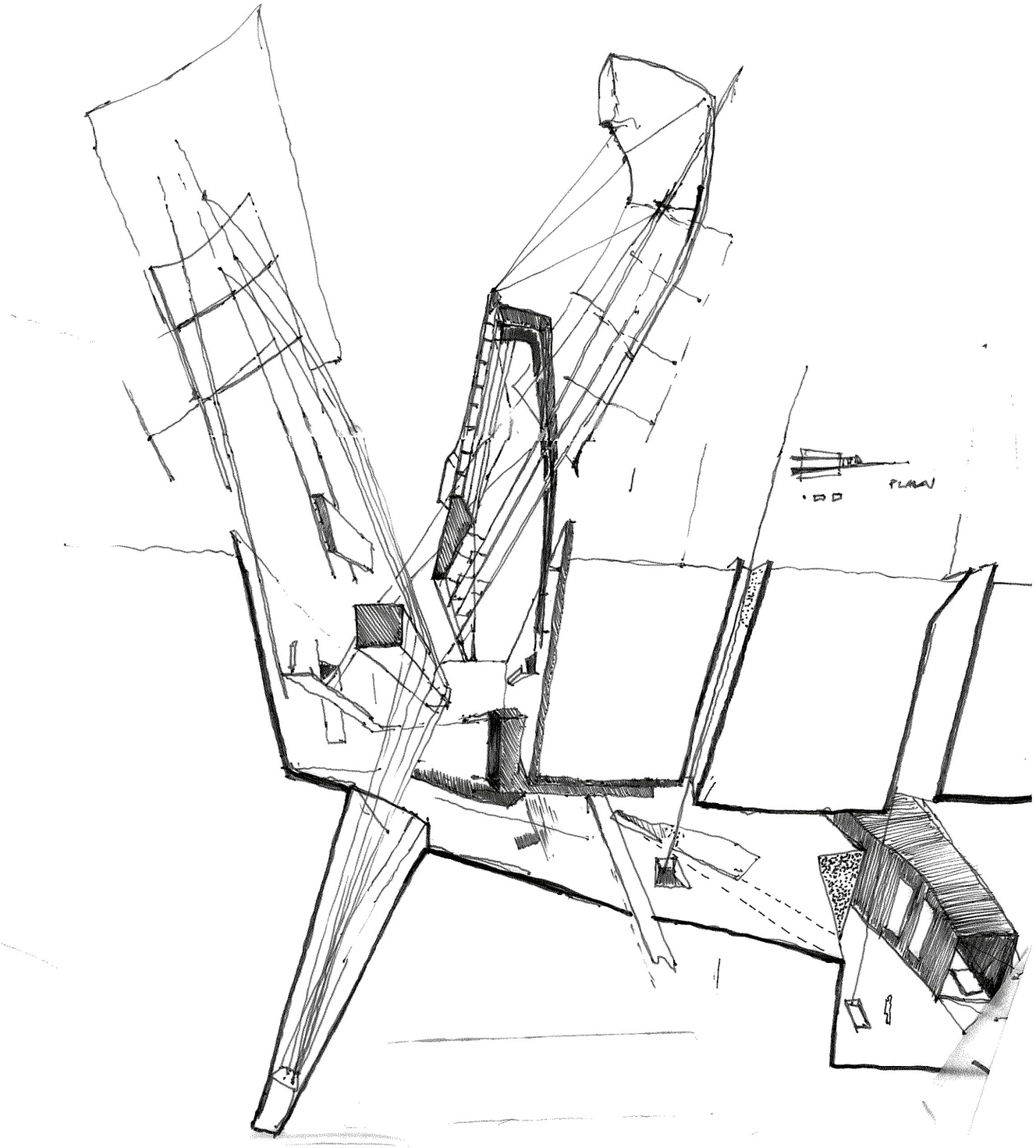


Figure 6.33: Spaces that are secret and unreachable

6.7 DESIGN MODELS

Following the abstract sketches, models were built inspired by the sketches. Again, scale and context were ignored as these models are, as with the sketches, manifestations of thought. Evidently, through this process a morphological and spatial design resulted, that gave direction for the design to follow.

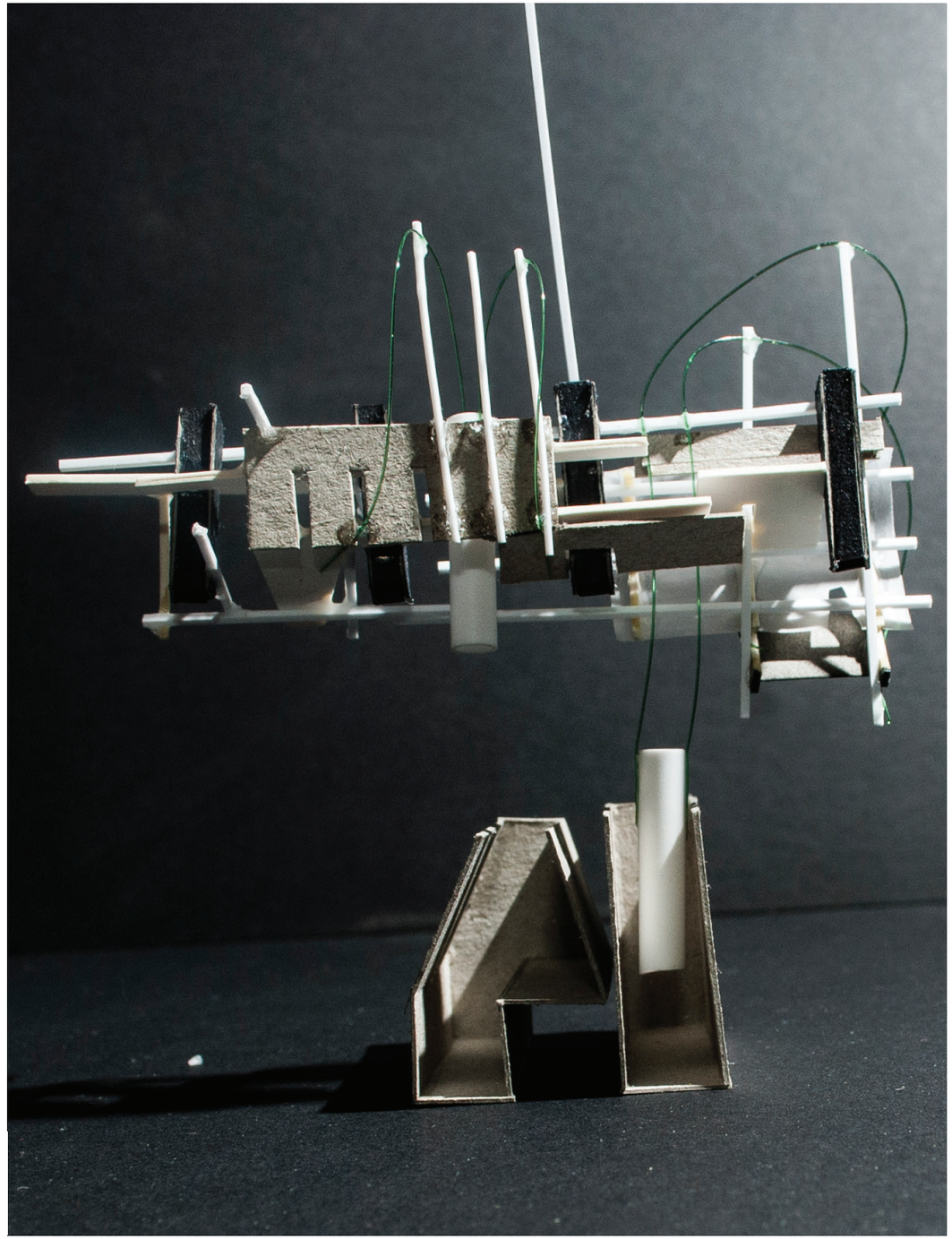


Figure 6.34: First thought model depicting a structure that lowers a cylinder into the earth.

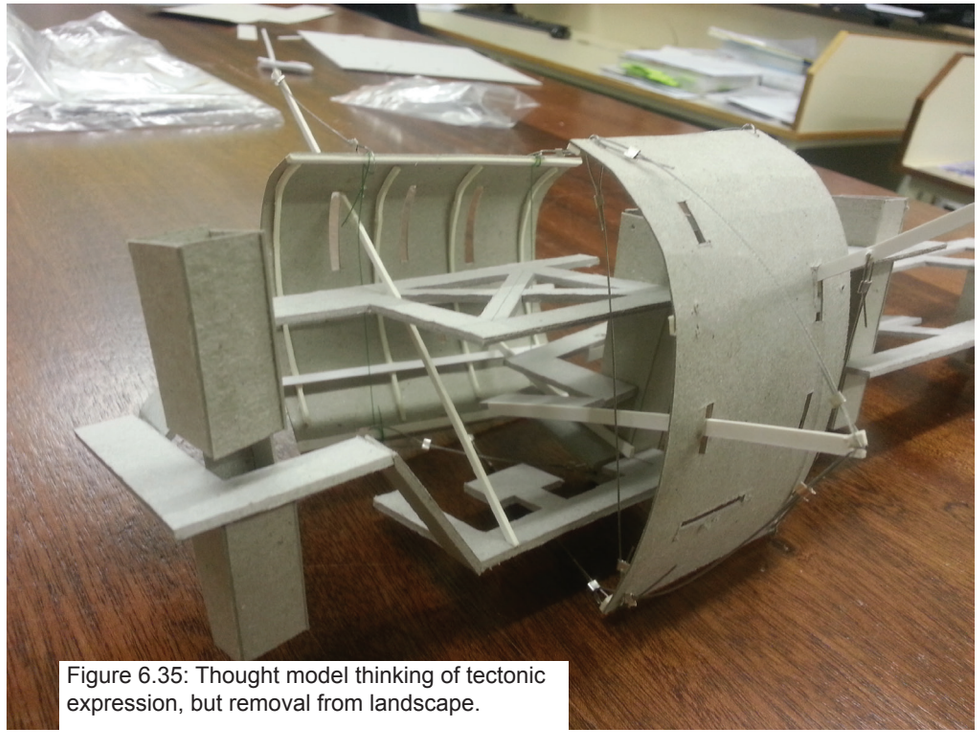


Figure 6.35: Thought model thinking of tectonic expression, but removal from landscape.

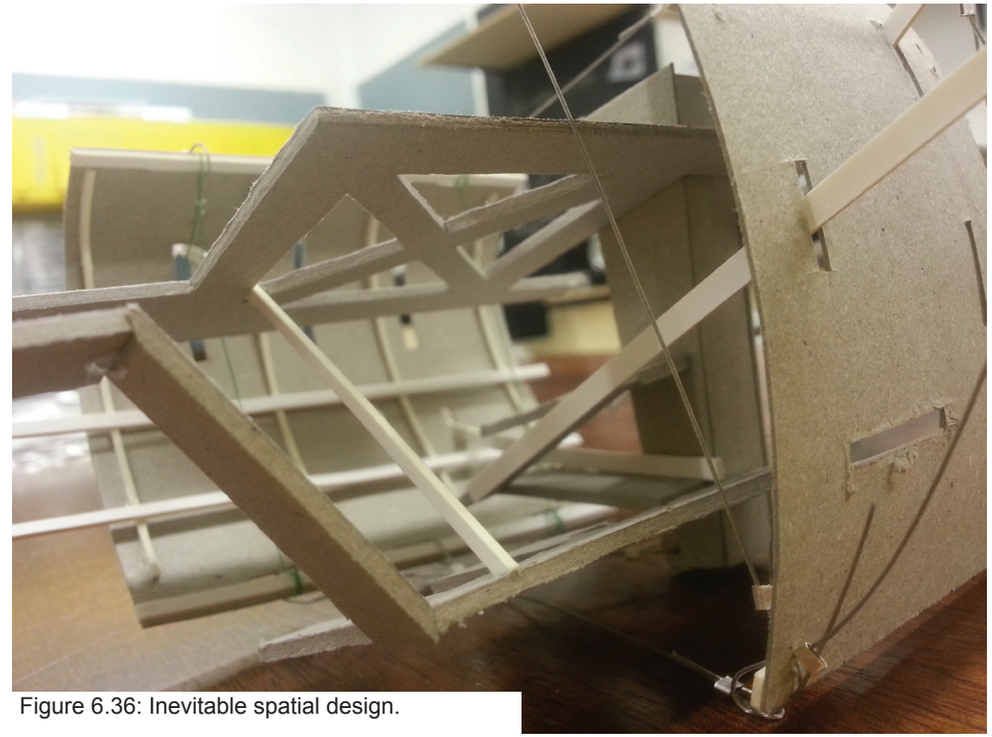


Figure 6.36: Inevitable spatial design.

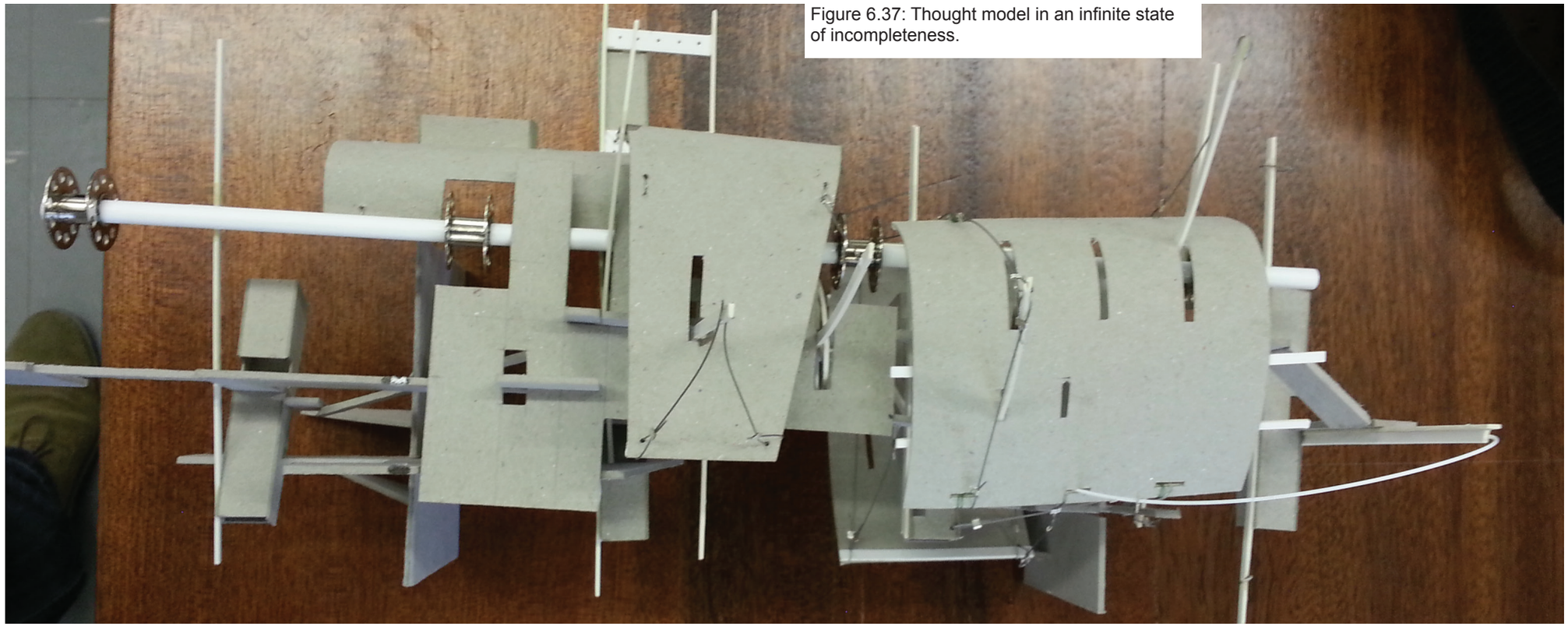


Figure 6.37: Thought model in an infinite state of incompleteness.



Figure 6.38: Tensile forces keeping structure together.

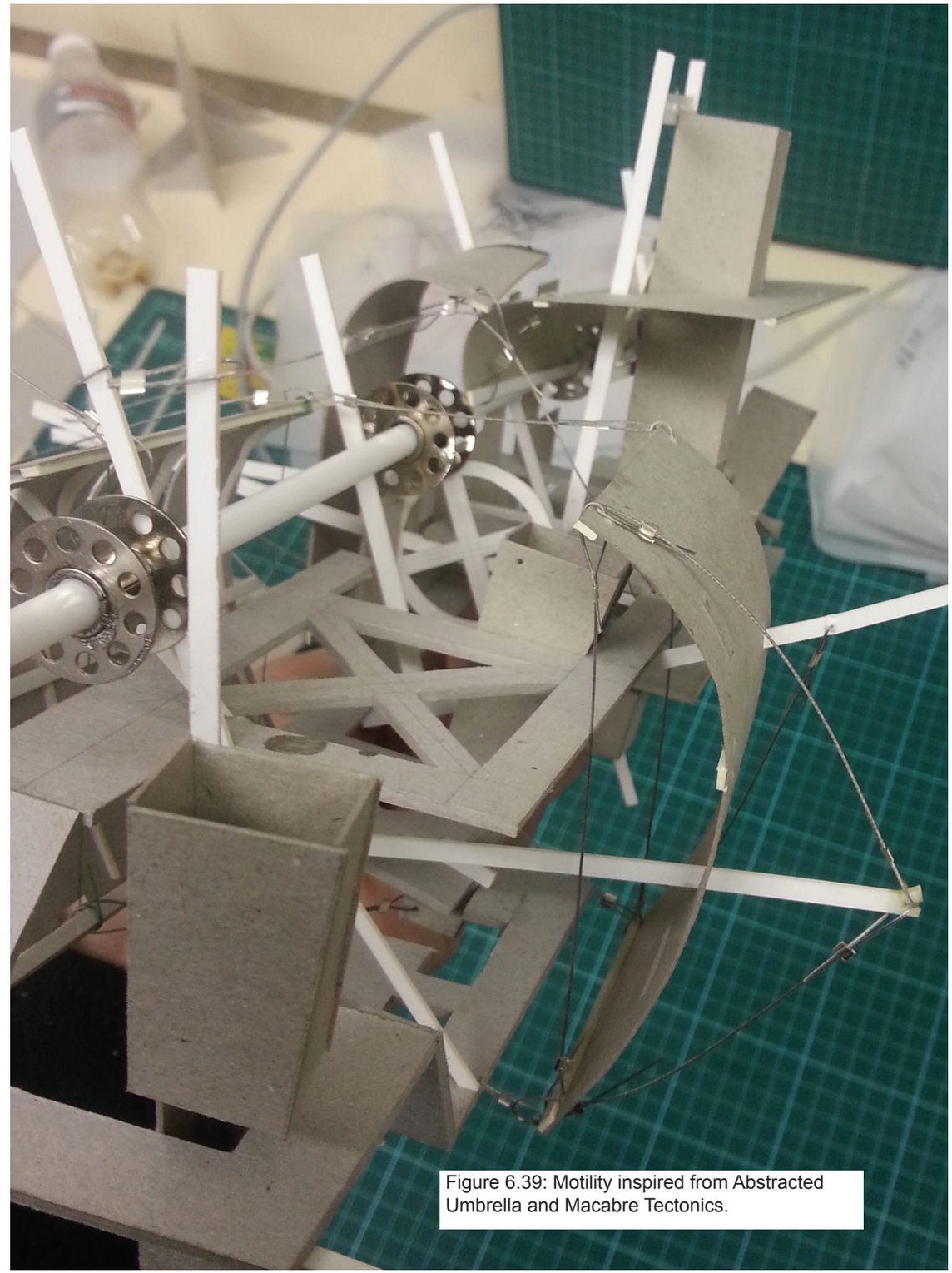


Figure 6.39: Motility inspired from Abstracted Umbrella and Macabre Tectonics.



Figure 6.40: Structure growing out of the earth.
Refer to Figure 6.29.

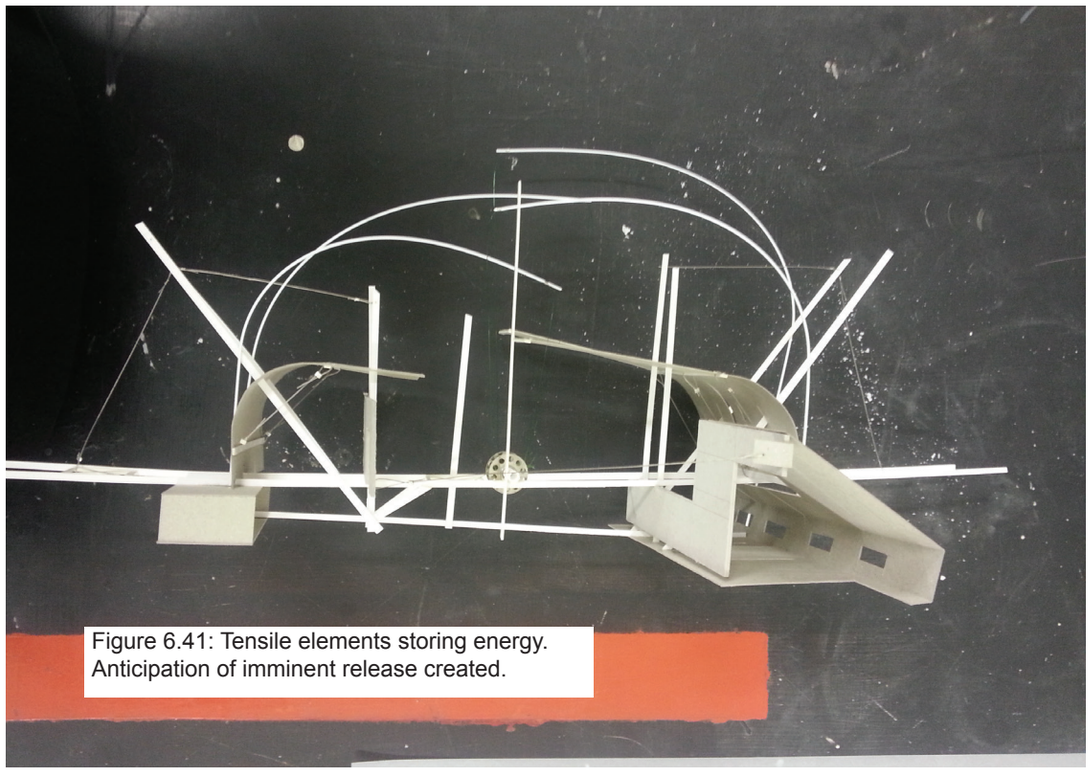


Figure 6.41: Tensile elements storing energy.
Anticipation of imminent release created.

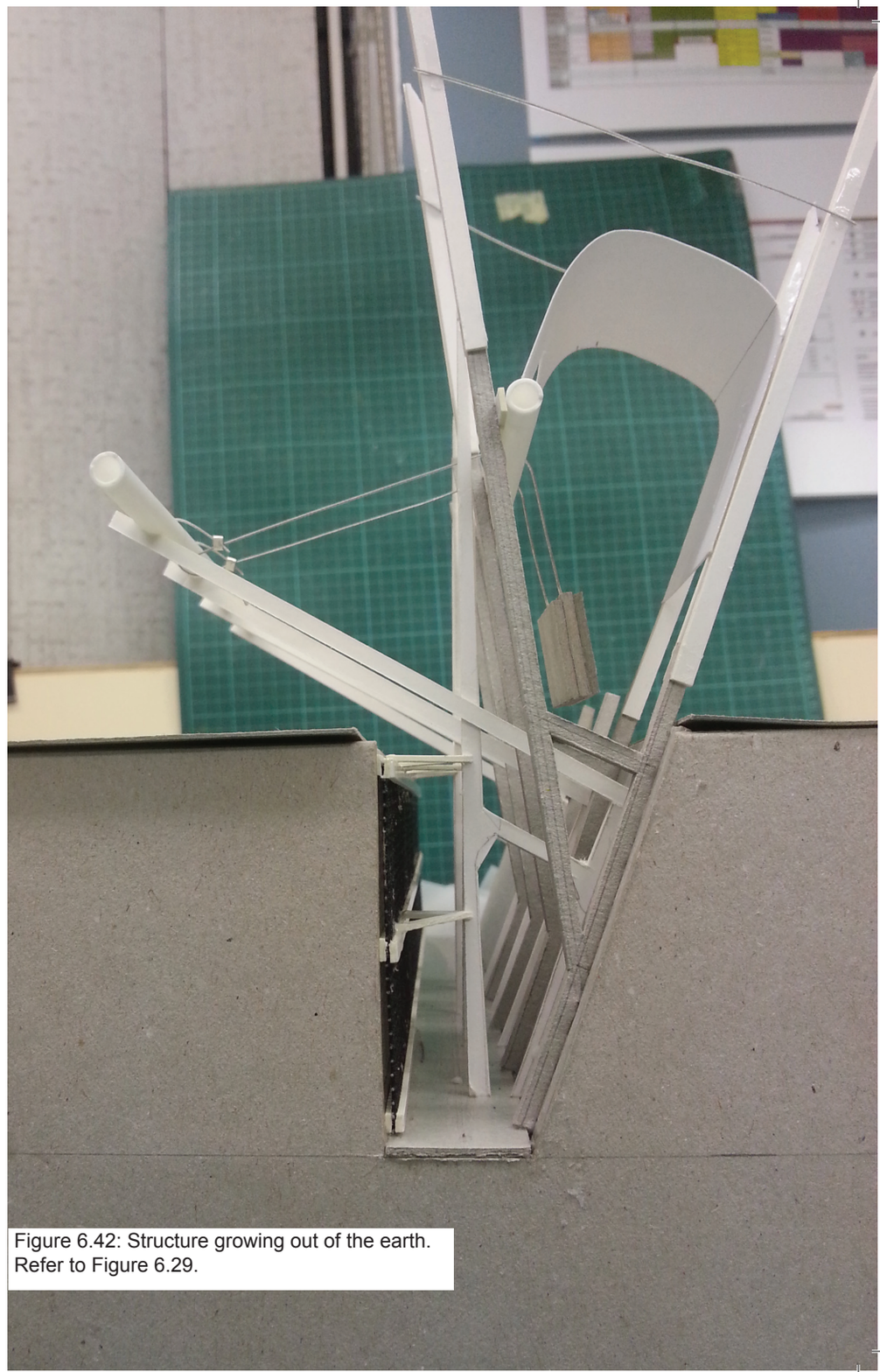


Figure 6.42: Structure growing out of the earth.
Refer to Figure 6.29.

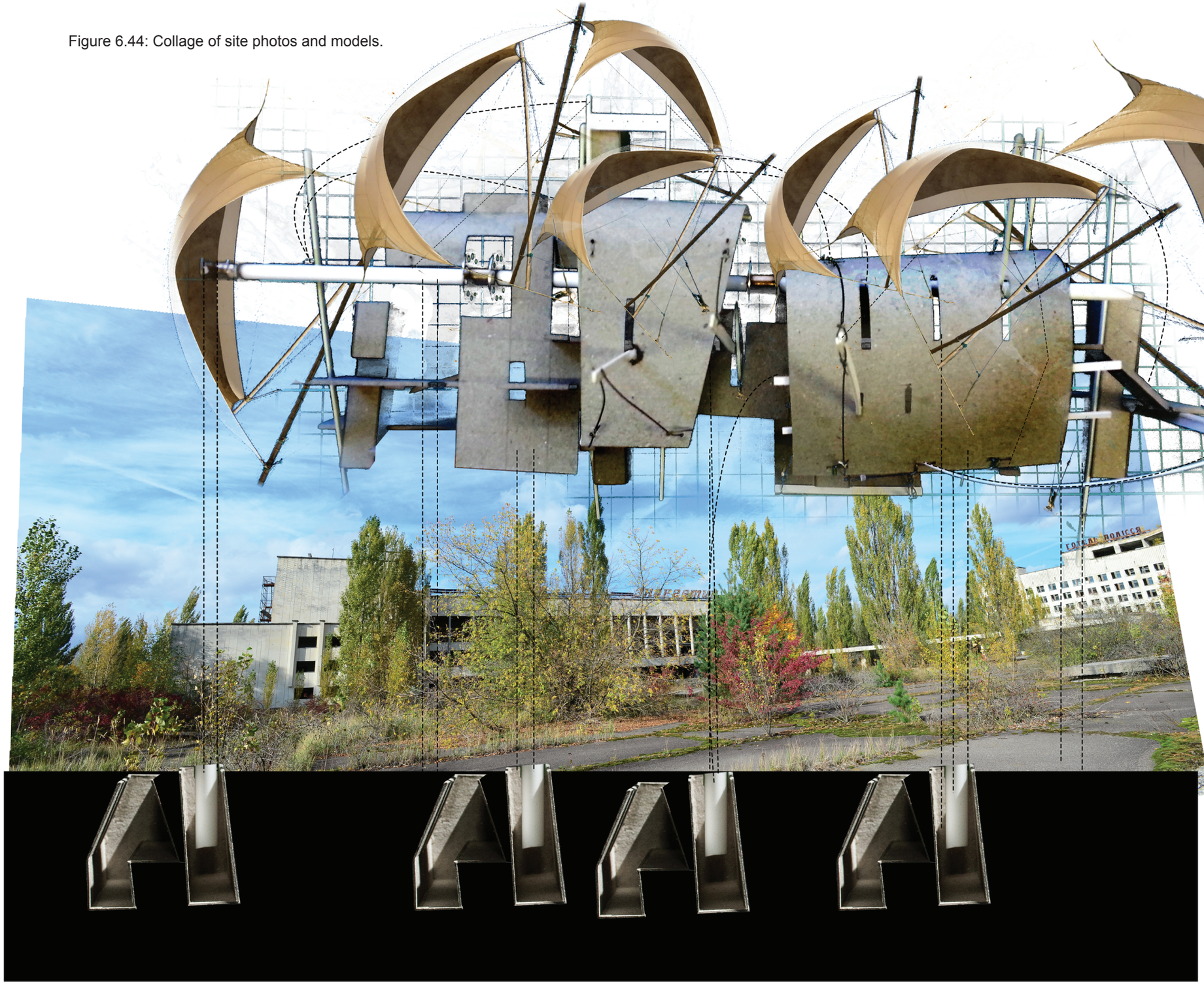
6.8 COLLAGE DESIGN METHOD

After building models derived from the previous abstract sketches, these models were photographed and digitally combined as a form of design thinking. Through this method a free mixture of images can be combined to form a design method that communicates a train of thought onto the site.



Figure 6.43: Collage of site photos and models.

Figure 6.44: Collage of site photos and models.



6.9 REFINED SKETCHES

Through theoretical investigation and the above mentioned design processes, the sketches took on more refined qualities. It was important to the author not to lose track of the experiential, experimental and paranormal qualities of the design and the context.

Sketches can be seen of a structure in a constant state of fragmentation. These structures are in a state of decay and this decay will alter their morphological quality over time.

Furthermore the ashes of the previous inhabitants of Pripyat will be stored in the structure to open up to the landscape as the structure, and simultaneously the radioactivity decays in the landscape.

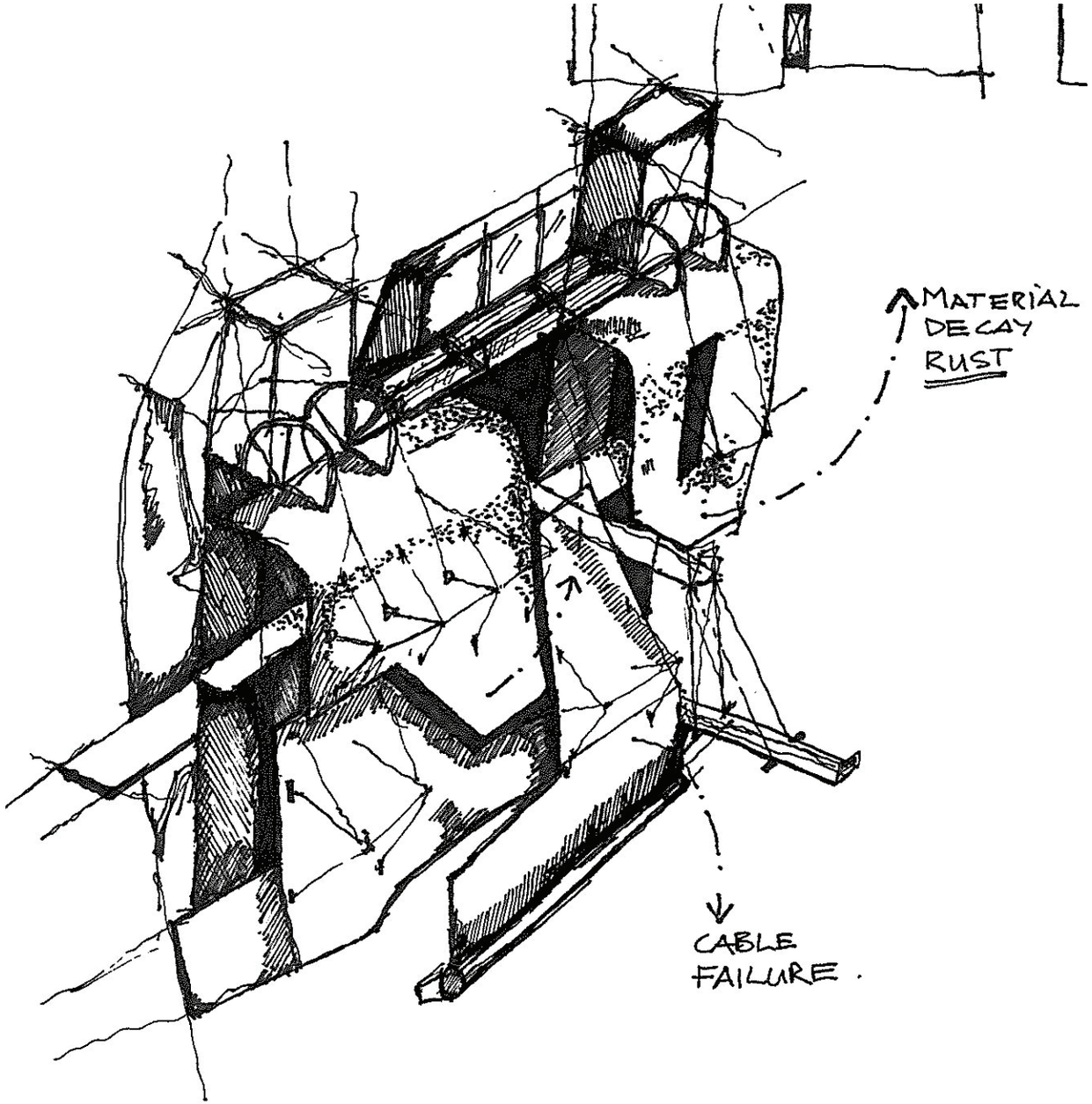


Figure 6.45: A structure that relies on the decay and failure of its parts to obtain a dynamic morphology.

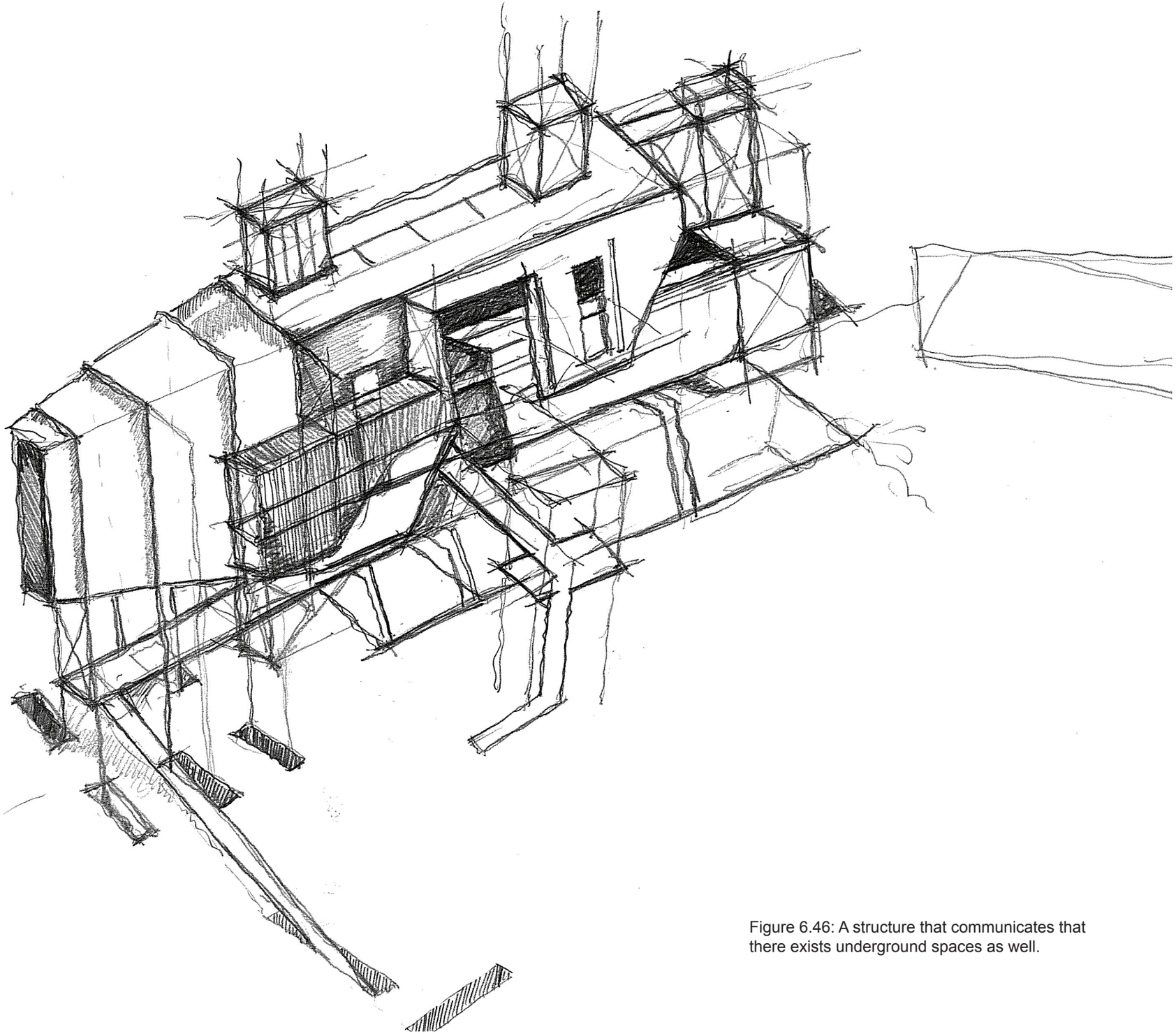


Figure 6.46: A structure that communicates that there exists underground spaces as well.

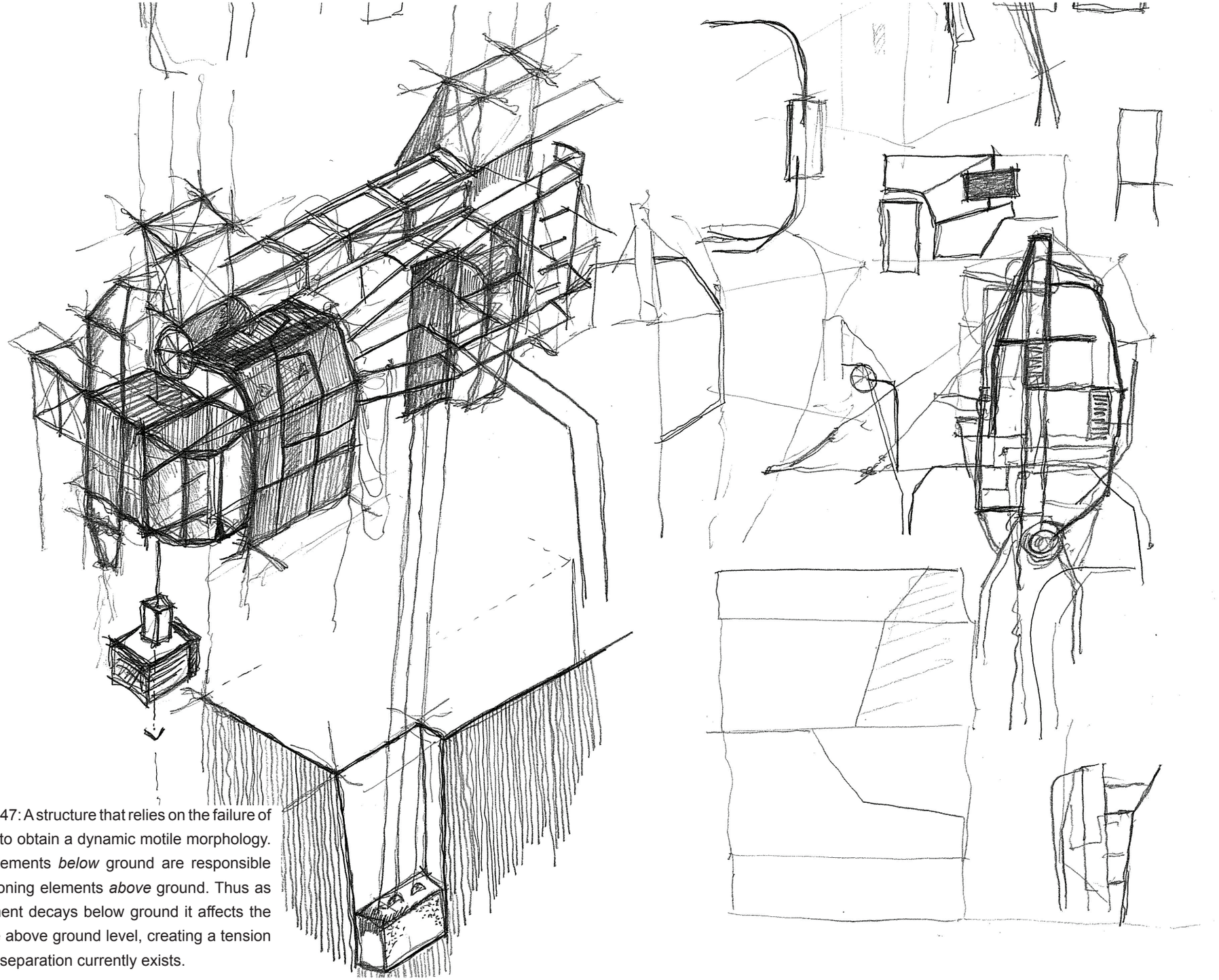


Figure 6.47: A structure that relies on the failure of its parts to obtain a dynamic motile morphology. Some elements *below* ground are responsible for tensioning elements *above* ground. Thus as the element decays below ground it affects the structure above ground level, creating a tension where a separation currently exists.

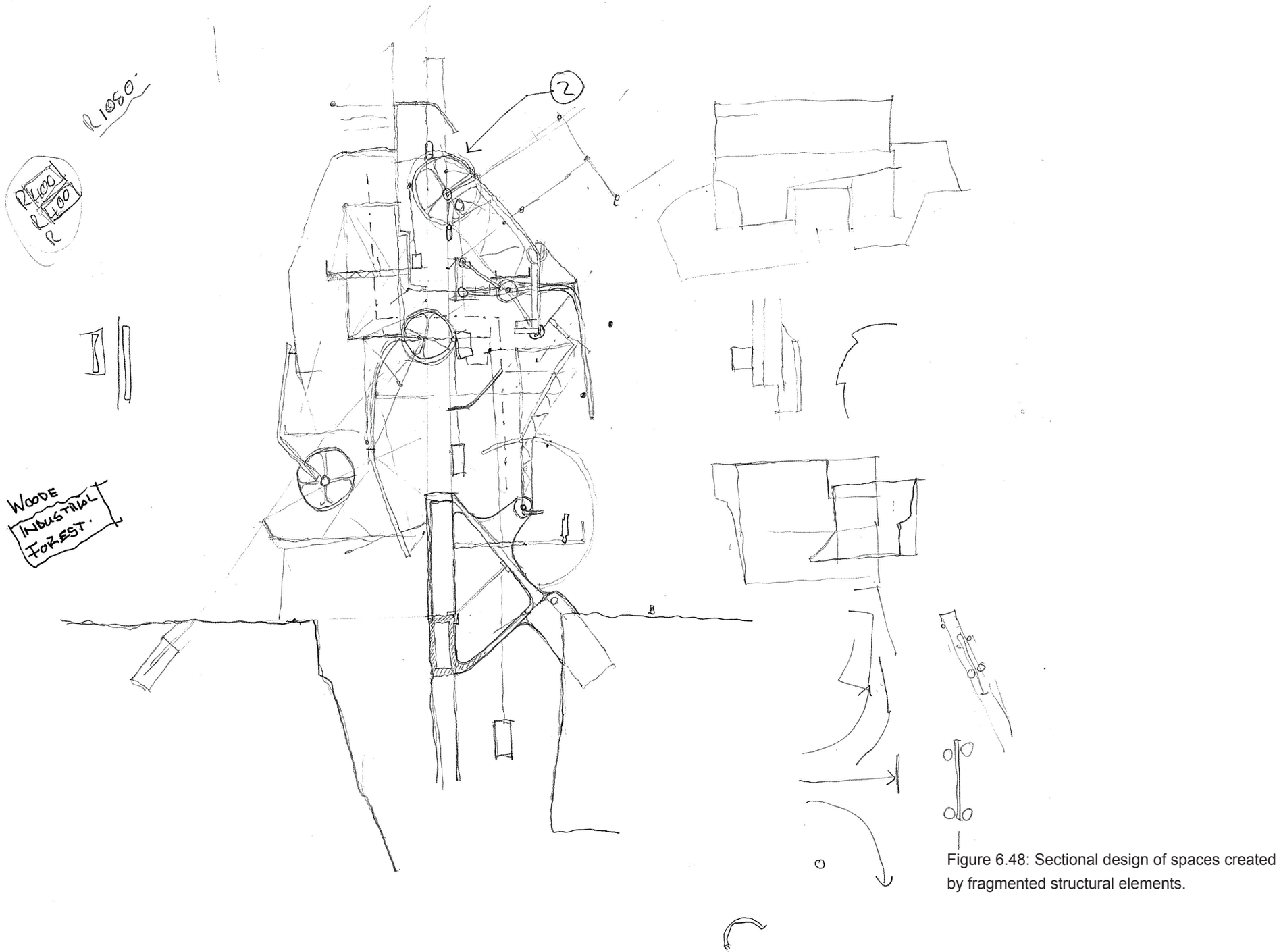


Figure 6.48: Sectional design of spaces created by fragmented structural elements.

6.10 REFINED MODELS

Again, models are being built from the sketches. The tactile element could be better investigated through this method. It also proved very successful in resolving spatial arrangement.

Scale could be better understood and the fragmenting of a structure in a constant state of incompleteness was manifested through this model.

The thought of materiality (Figure 6.52) also surfaced and how timing could be generated through time frames of decay of different materials (Refer back to section 6.2).

Decay of a material in one part of the structure could affect failure in a whole different part of the structure. Failure of cables below ground could cause spaces above ground to open up to the landscape.

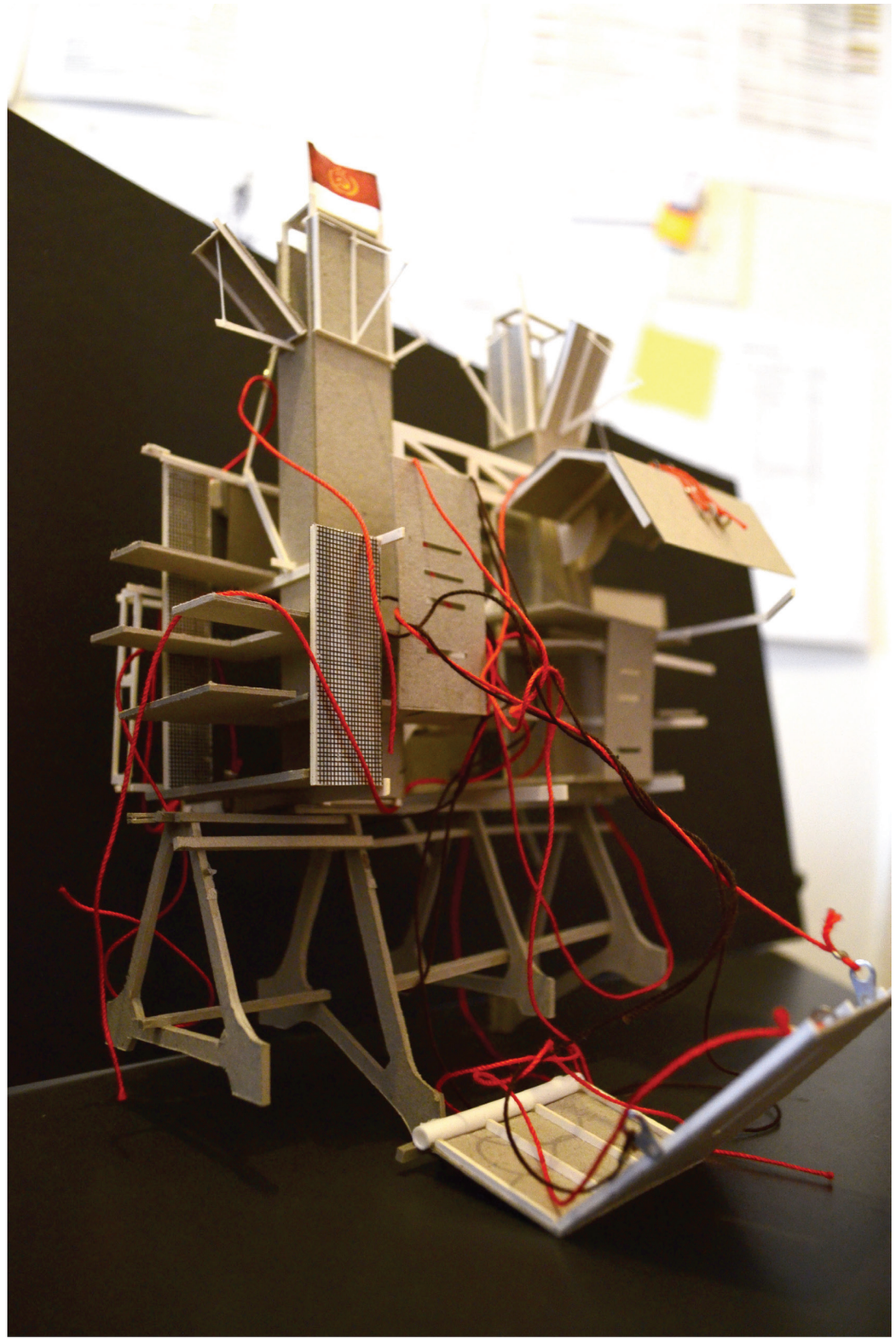


Figure 6.49: Model showing decay and failure.

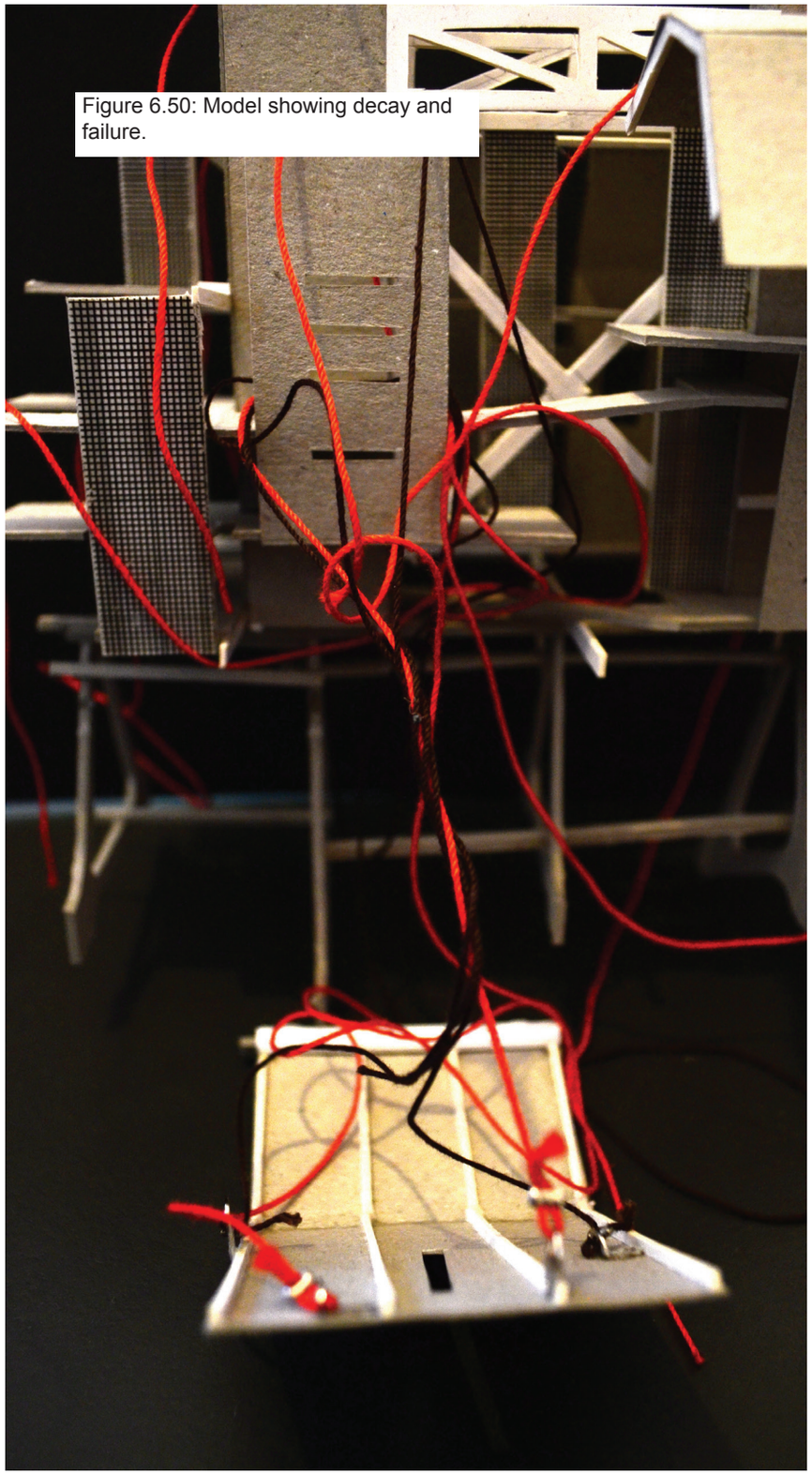


Figure 6.50: Model showing decay and failure.

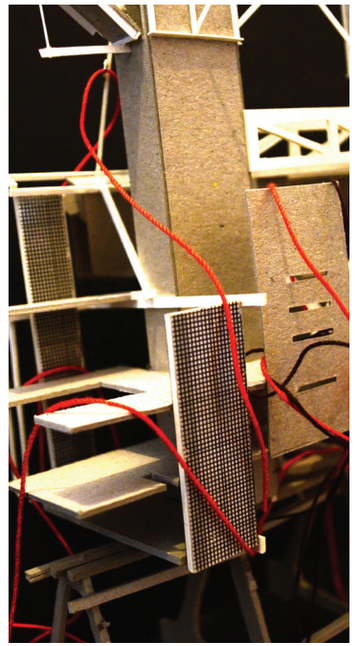


Figure 6.51: Spatial order.

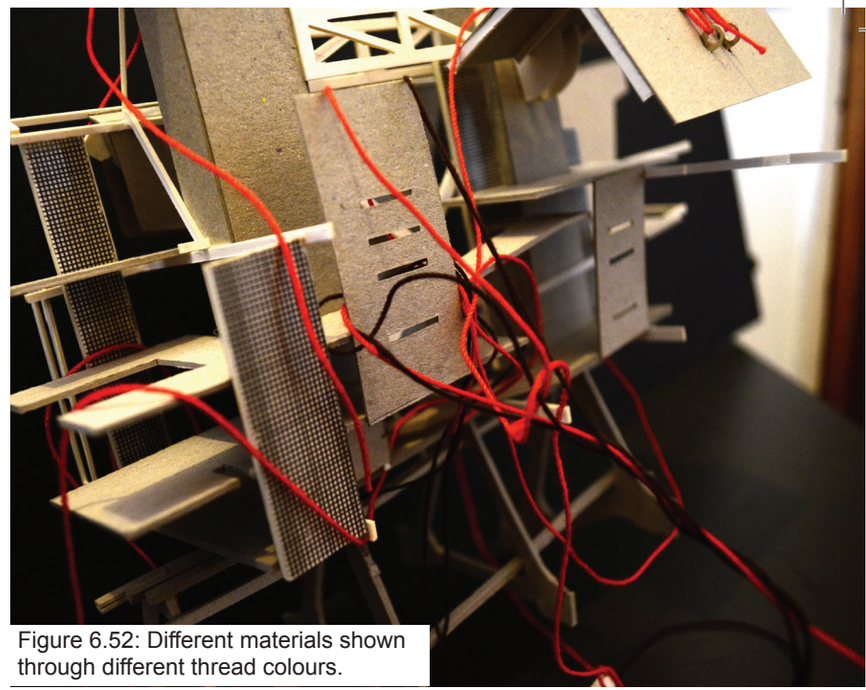


Figure 6.52: Different materials shown through different thread colours.

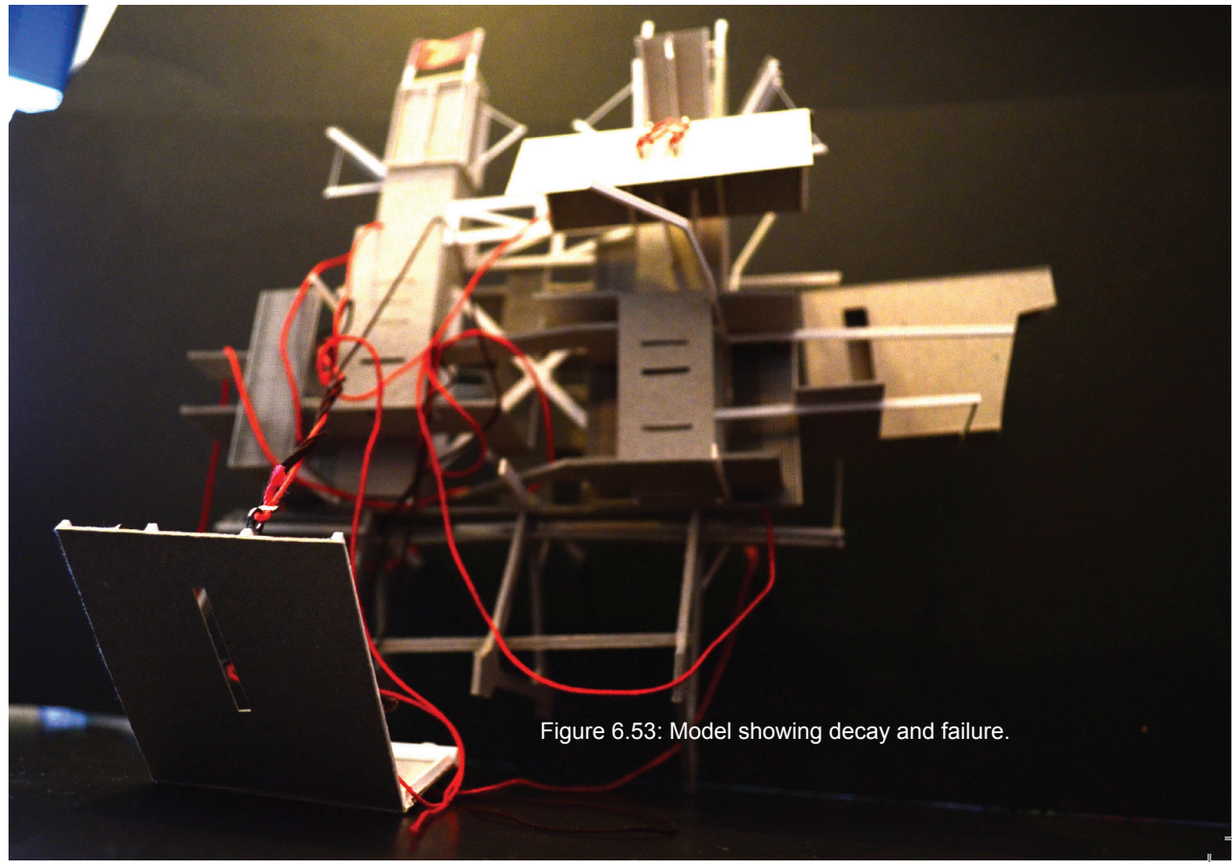


Figure 6.53: Model showing decay and failure.

6.11 BRAIN WORK RESULT

The above mentioned processes in conjunction with the theoretical discourse all contributed to a resultant design that would be discussed in the next chapter. All these processes kept influencing the design and even the earliest inspirations can be seen in the design. Thus, this chapter should be seen as a whole consisting of various parts, instead of a chronological sequence leading to a solution.

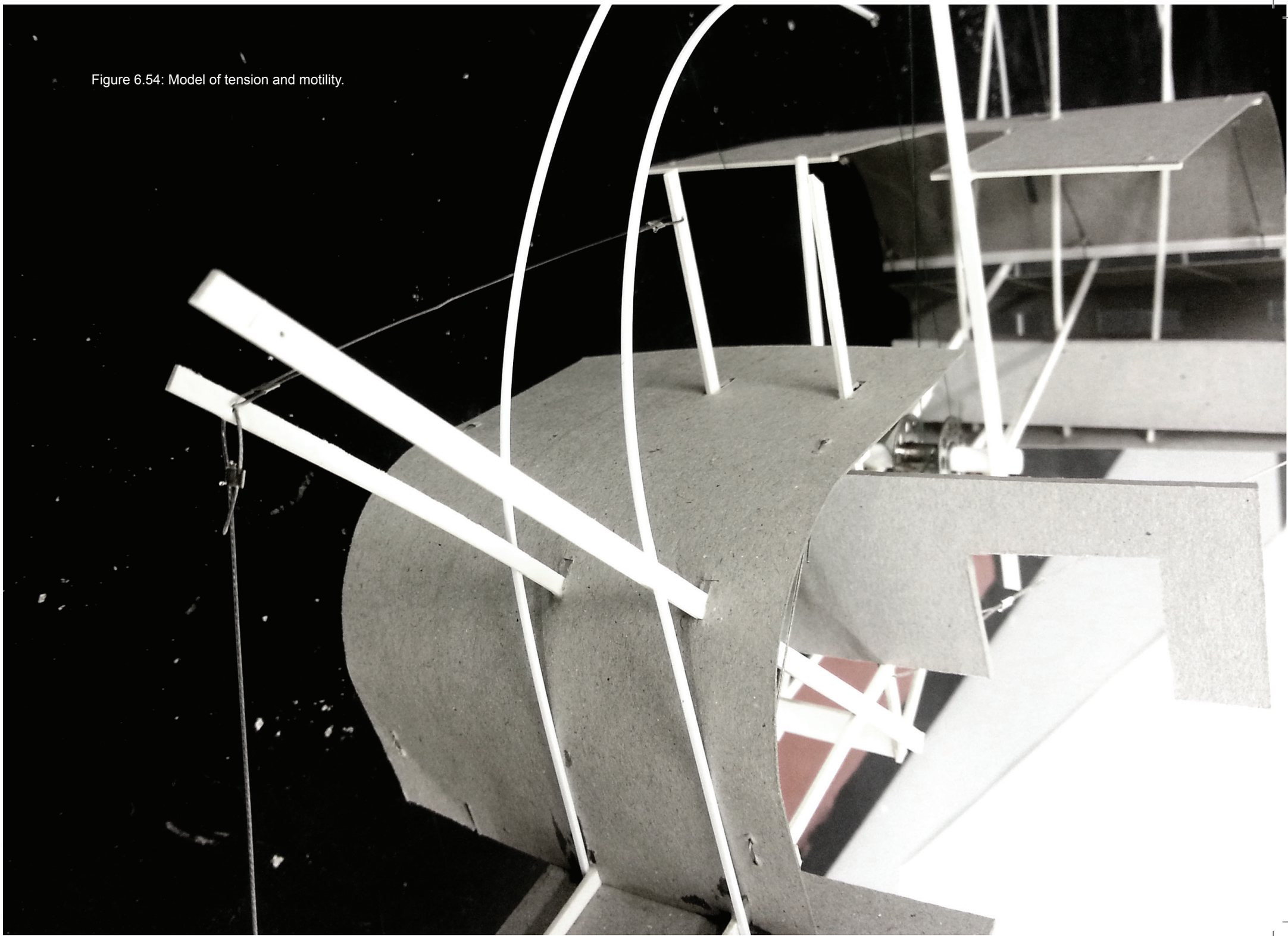


Figure 6.54: Model of tension and motility.

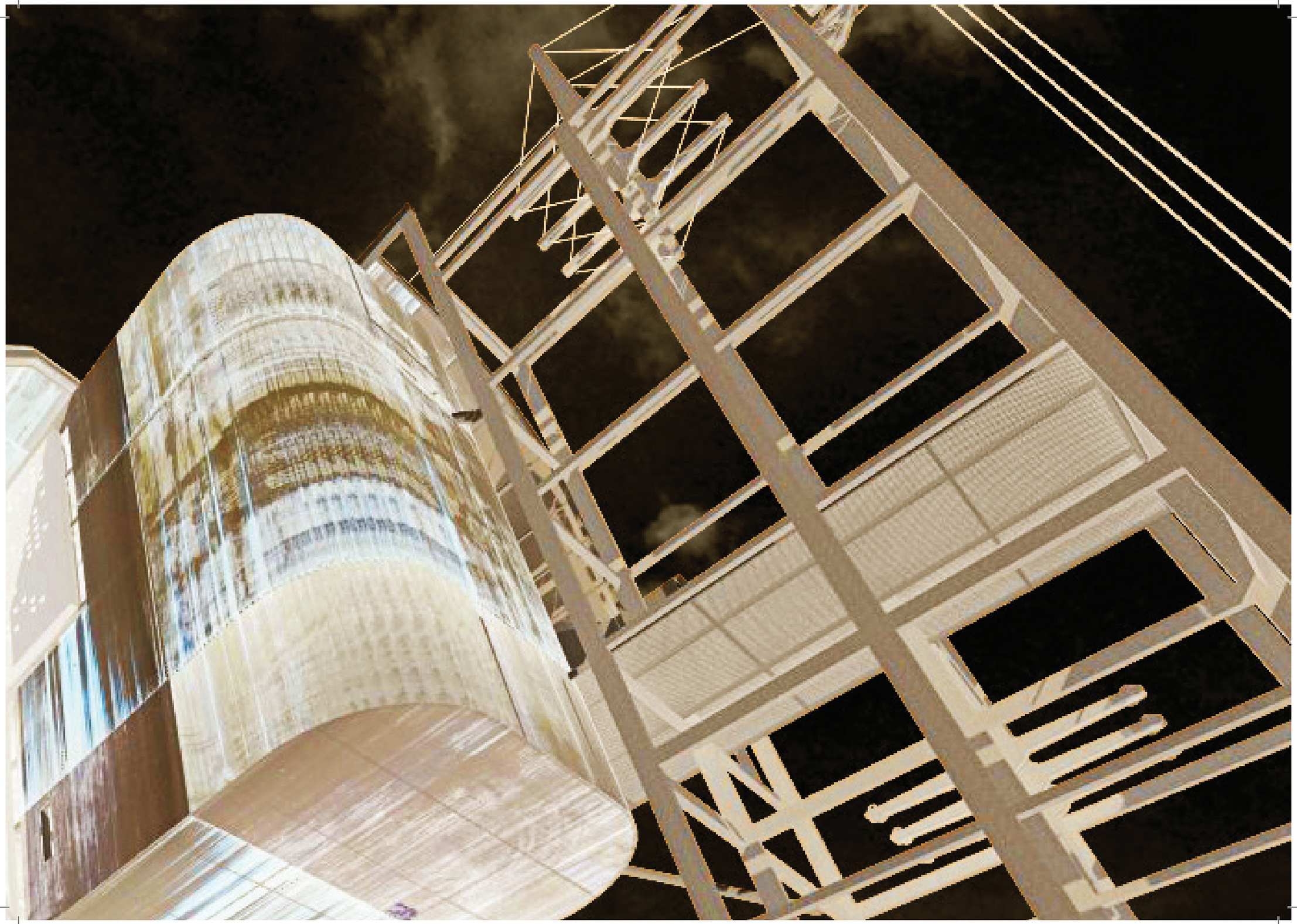
7

DESIGN DISCOURSE | Дизайн дискурс



"They should let people in – they'd all come crawling back on their knees. They scattered our sorrow all over the globe. Only the dead come back now. The dead are allowed to. But the living can only come at night, through the forest."

– Person evacuated from Chernobyl (Alexievich, 2006: 76)



7.1 ESSENCE OF THE BUILDING

The core of the design lies with the Burial Halls, as these buildings will hold the remains of the evacuees of Pripyat in the years to follow. As time elapses through centuries, the building and the radiation will decay as neither of these are as powerful or as infinite as death.

Decay of the building will progress in a motile fashion, resulting in a building that opens and reveals itself in a way that can be interpreted as possessing a life *force* of its own. As the building opens, the wind will distribute the ashes of the evacuees over the landscape in the same pattern as the radiation fallout during the disaster.

Figures 7.1.1 - 7.1.3: Decay causing a motile reaction that opens the structure for the wind to pass through.

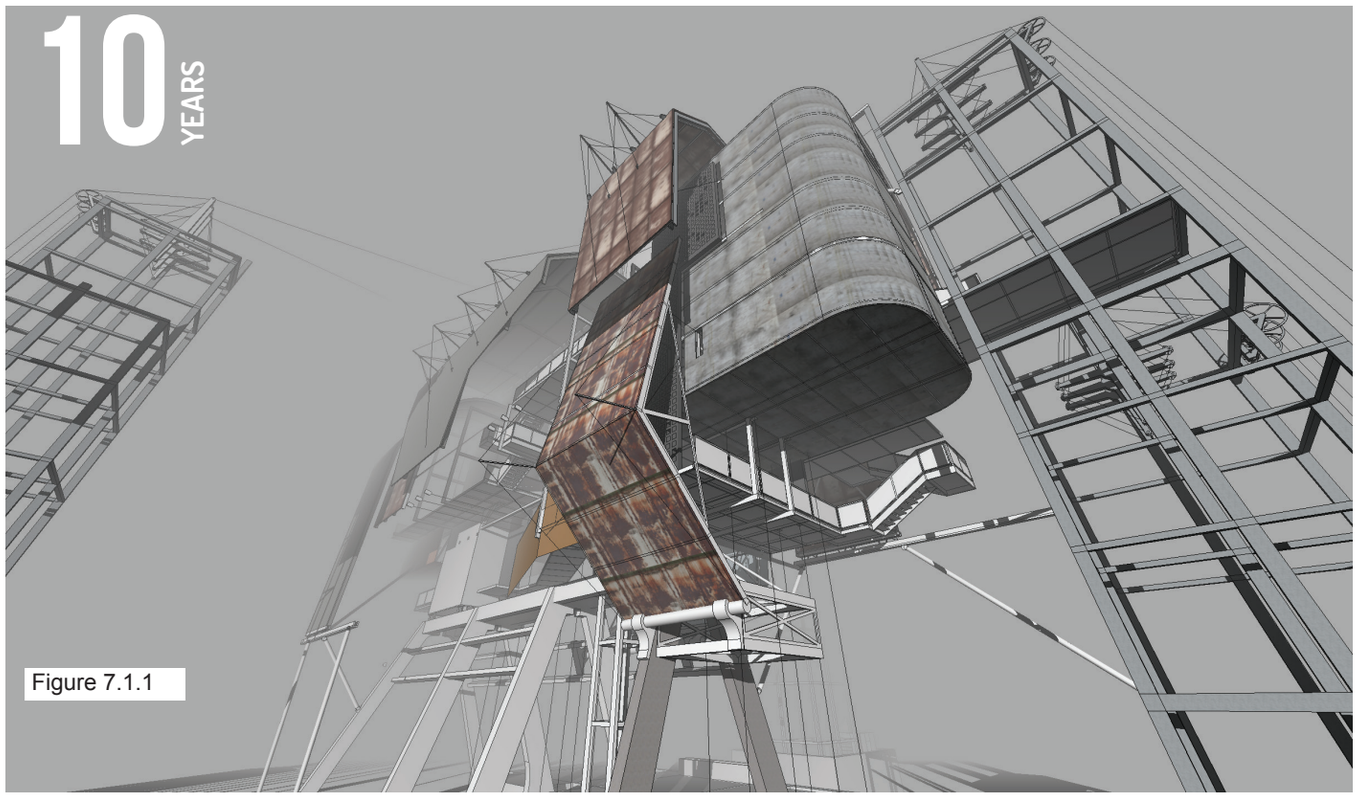


Figure 7.1.1

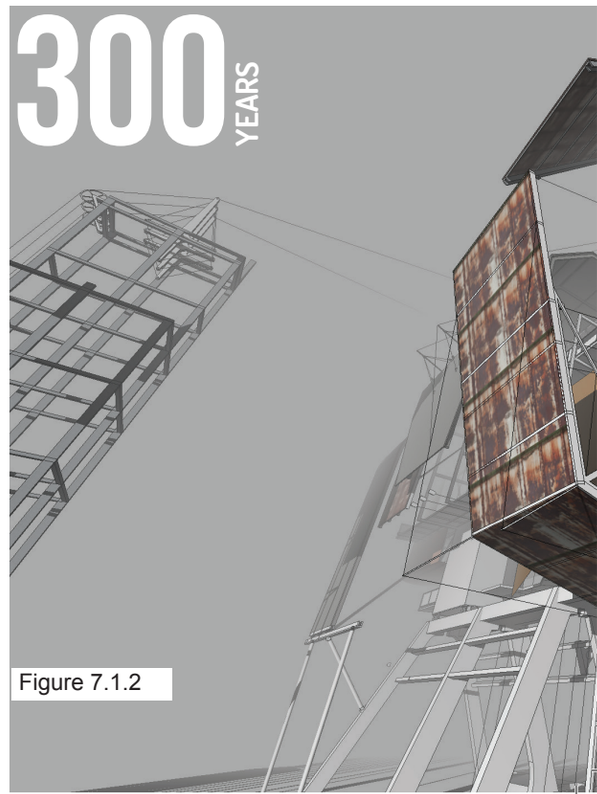
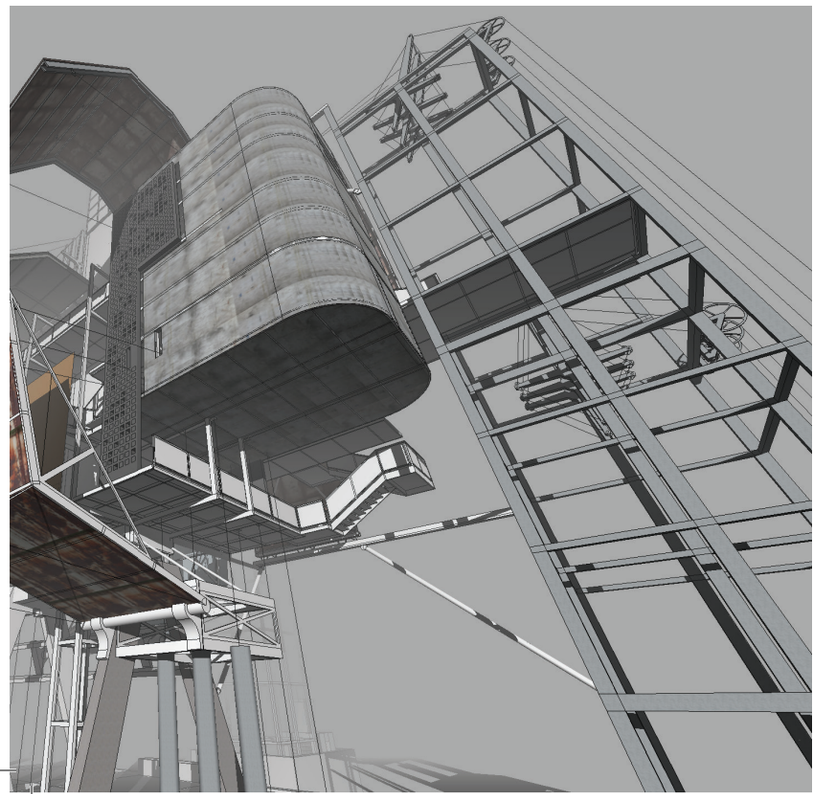


Figure 7.1.2

In death, Polissya and her people will be reunited. Over her skin they will wander and she will be whole again.



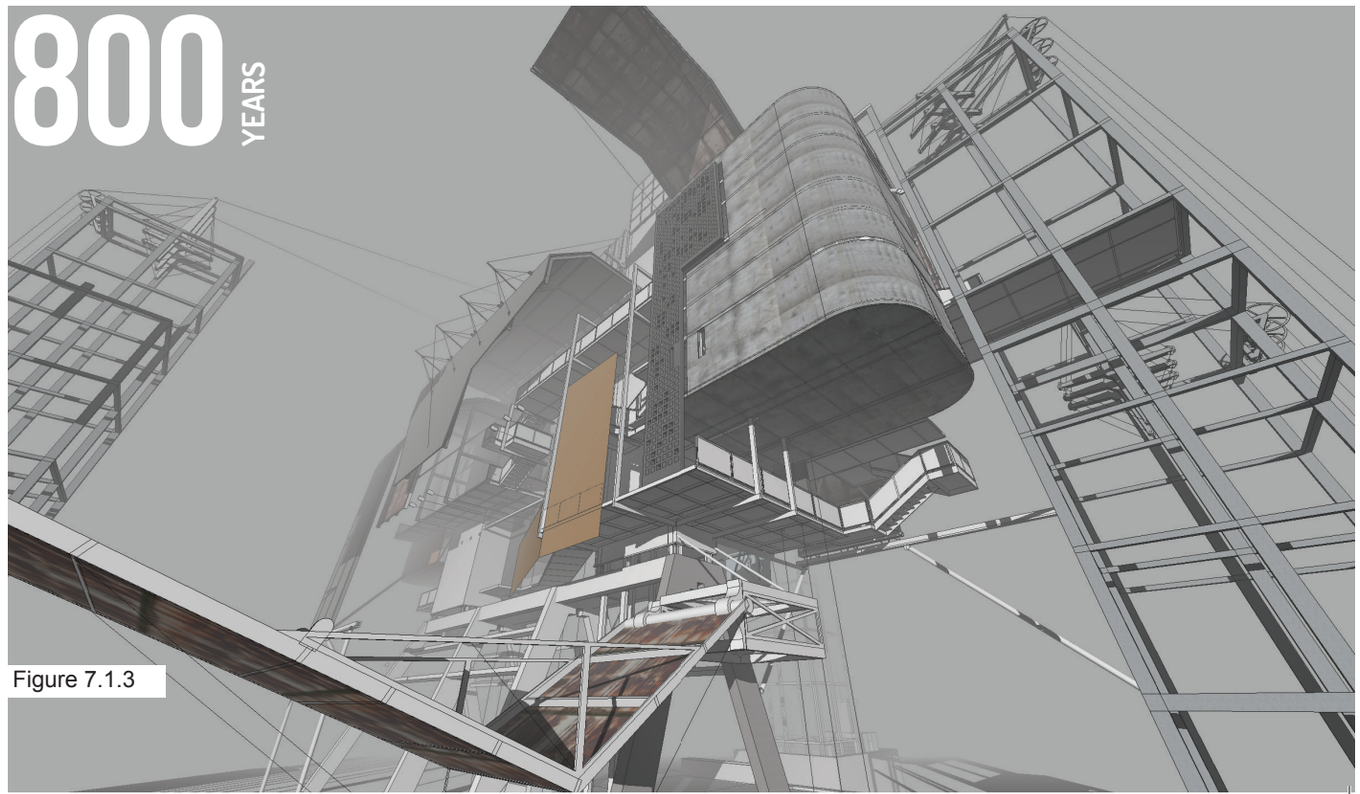


Figure 7.1.3

7.2 ADDRESSING THEORY THROUGH DESIGN

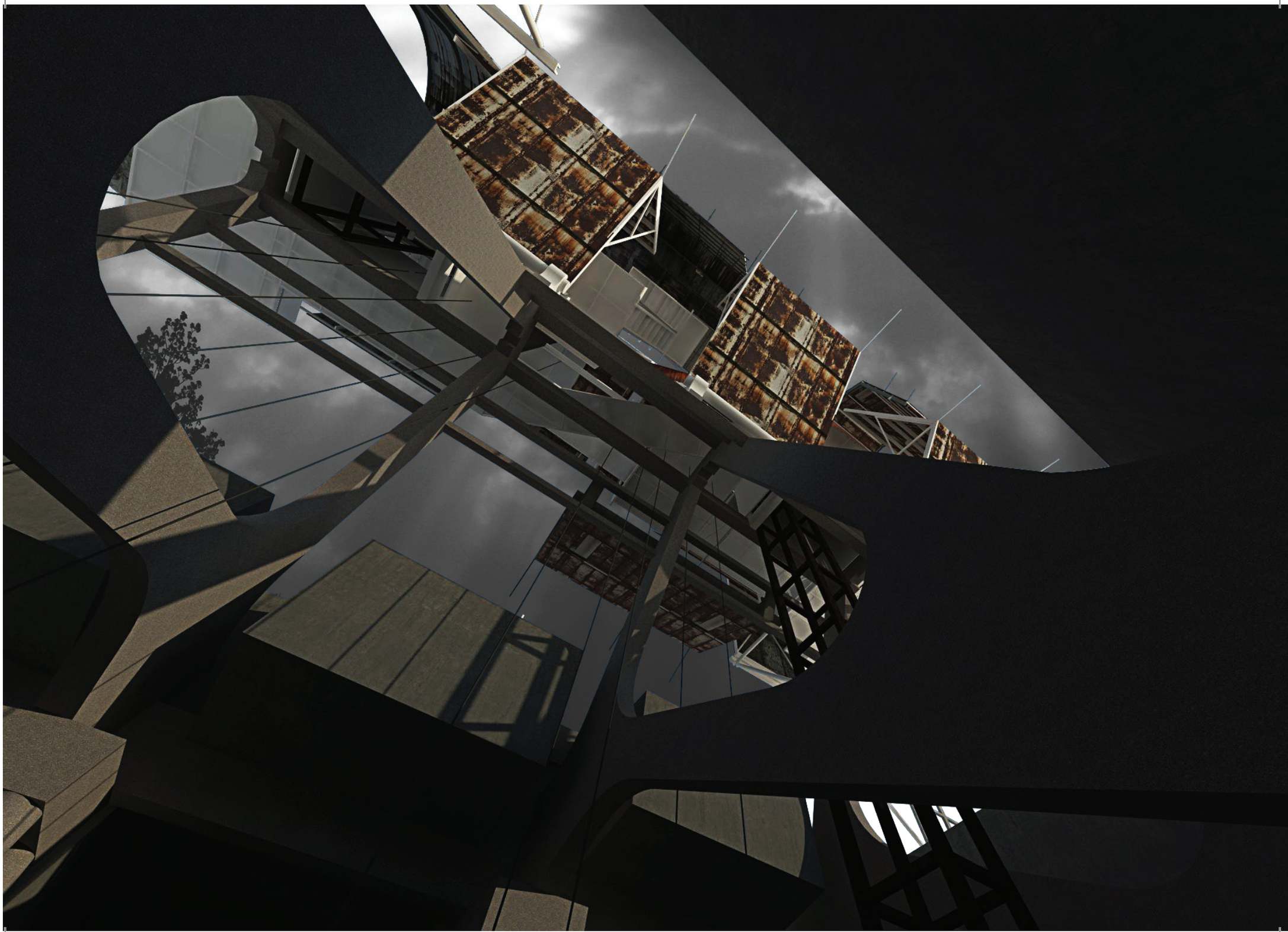
As stated, the building will be a container for the remains of the previous inhabitants of Pripyat. By returning the people to their town, even if it is through death, they are once again reunited with their beloved town. Not only will the descendants of these individuals be given a place to grieve, but the previous inhabitants will have a place to grieve their landscape. Spaces are created both below and above the ground level, resulting in an individual choice of where the remains of the deceased can be placed. Through this random placement of above and below, spatial tension through temporal human presence will create a cognitive fusion of earth and sky, and inevitably mortals and divinities.

Not only will this structure address the relationship of man to landscape but also address the magical phenomena that exist in the context. The building consists of secret spaces that are not readily available to humans but are for the use of Polissya. Through these spaces the individual can interact on a deeper level with the dichotomous being wandering the landscape, that is if they manage to find these spaces. Wandering off from the central spaces of the square, the building provides the user with a safe pocket of space through which they can enter into a dark magical place with Polissya.

As radioactivity and the building decays over the following centuries, the physical form of the building will change and reveal its inner spaces to the landscape. The wind that spread the radioactivity over the landscape will spread the ashes of her people in the same direction as the radioactivity was spread during the disaster. In essence, after centuries when the landscape is clean, a second fallout namely the remains of the people of Pripyat, will be overlaid onto this pure landscape.

Throughout this chapter cross references related to design will be indicated between theory, precedents and brain work as discussed in earlier chapters.

Opposite page:
Figures 7.2: Viewing sky from within earth.



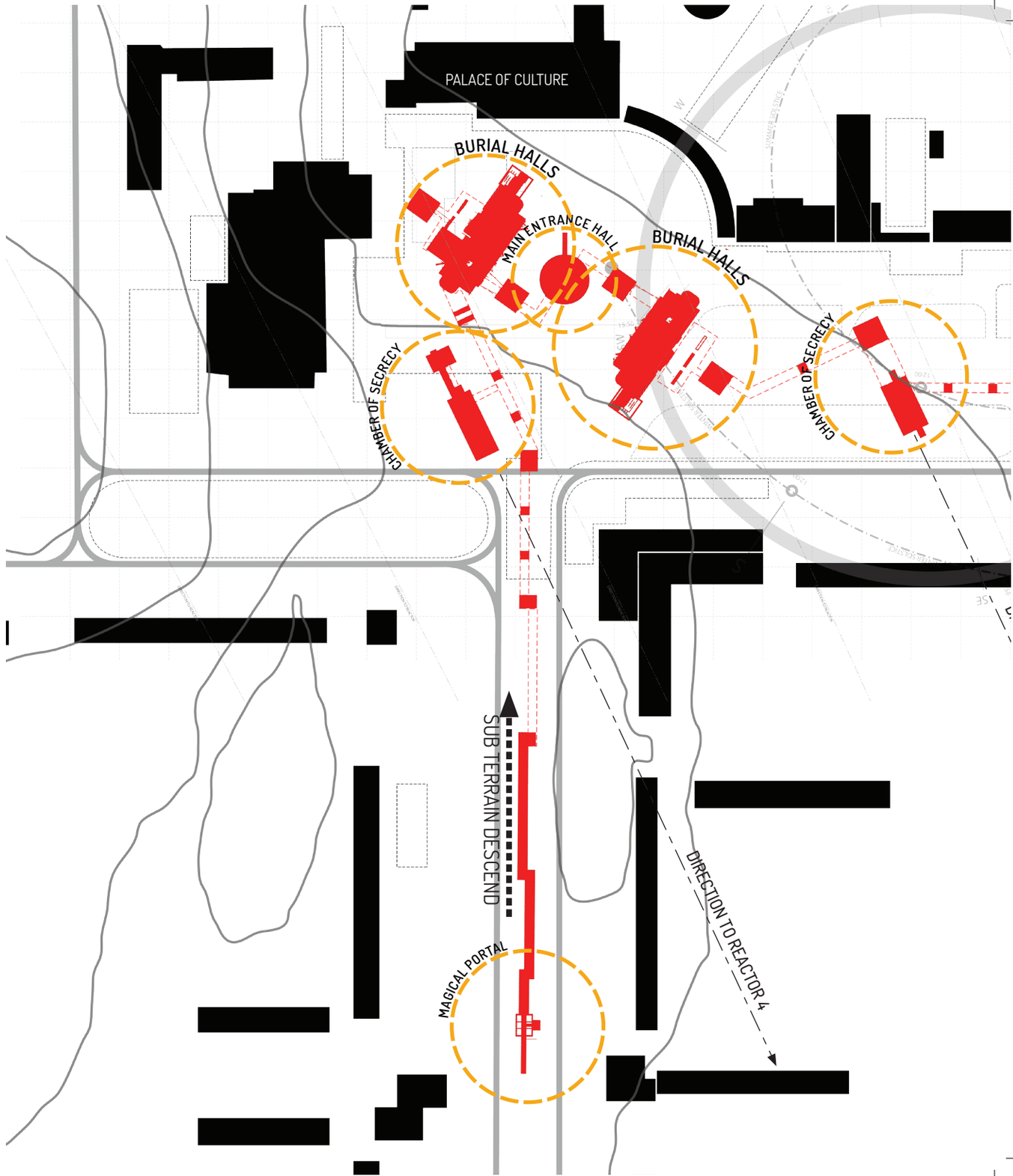
7.3 SITE PLAN

Morphological Meaning of Site Plan
The design contains a series of buildings connected by a subterranean circulation route. In essence an explosion of space connected through meaning.

The areas furthest from Lenin Square, namely the Magical Portals and their directional descend, respect and at the same time are *bound* by the strong modernist layout of the town. These extend into the two important axes, namely Lenin Street and the cultural axis.

The Chambers of Secrecy are on axis towards Reactor 4 at the Chernobyl Nuclear Power Plant, breaking the modernist grid while addressing the object in the landscape responsible for the disaster.

The linear Burial Halls are positioned North-South, both to address the existing buildings' disregard for orientation in the landscape, and also



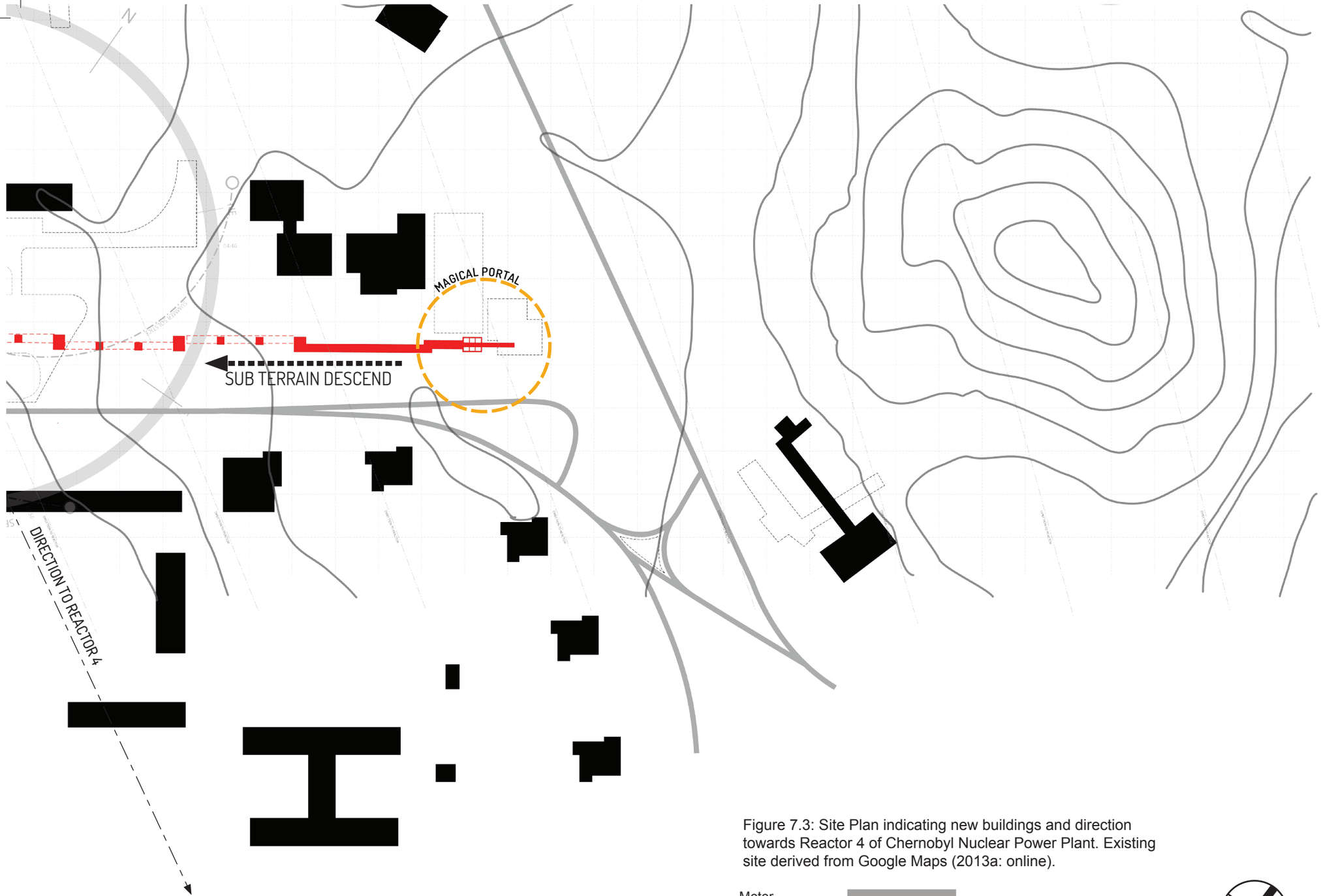


Figure 7.3: Site Plan indicating new buildings and direction towards Reactor 4 of Chernobyl Nuclear Power Plant. Existing site derived from Google Maps (2013a: online).

Meter

0 50 100 200

to position their longitudinal sides East-West. The reason for this is not only for the spiritual eastern and western sun to illuminate the burial spaces, but also that the niches containing the human ashes are orientated perpendicular towards the western wind. The role of the wind in the design will be discussed in detail in the section on the Burial Hall's design.

The Main Entrance Hall lies on axis with Lenin Street, and also acts as the centre of the curved walkway that connects the Palace of Culture with Hotel Polissya. It thus exists in duality, in that it not only retains tension between the Burial Halls -much like an atom-, but also addresses the existing orders on site.

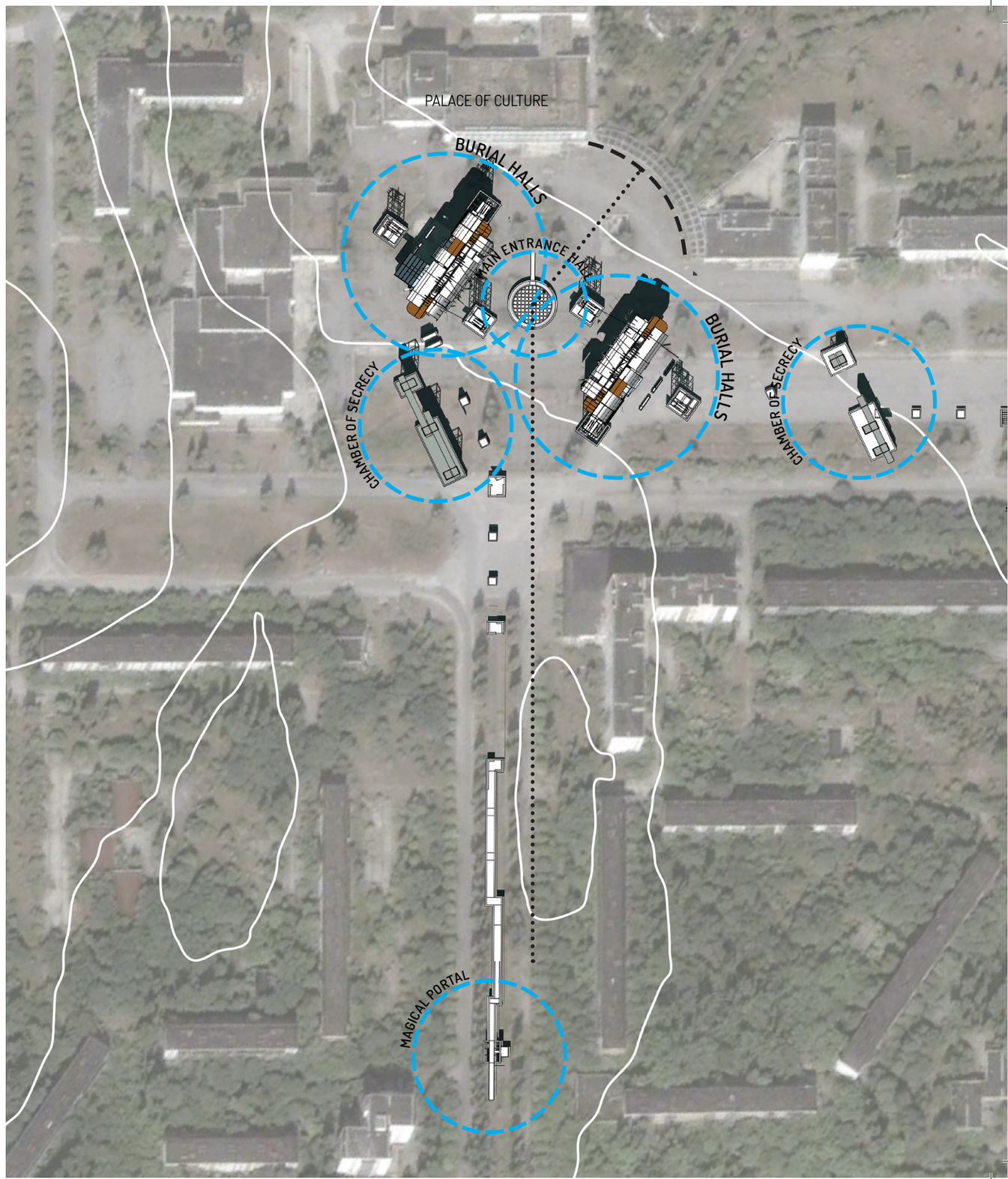
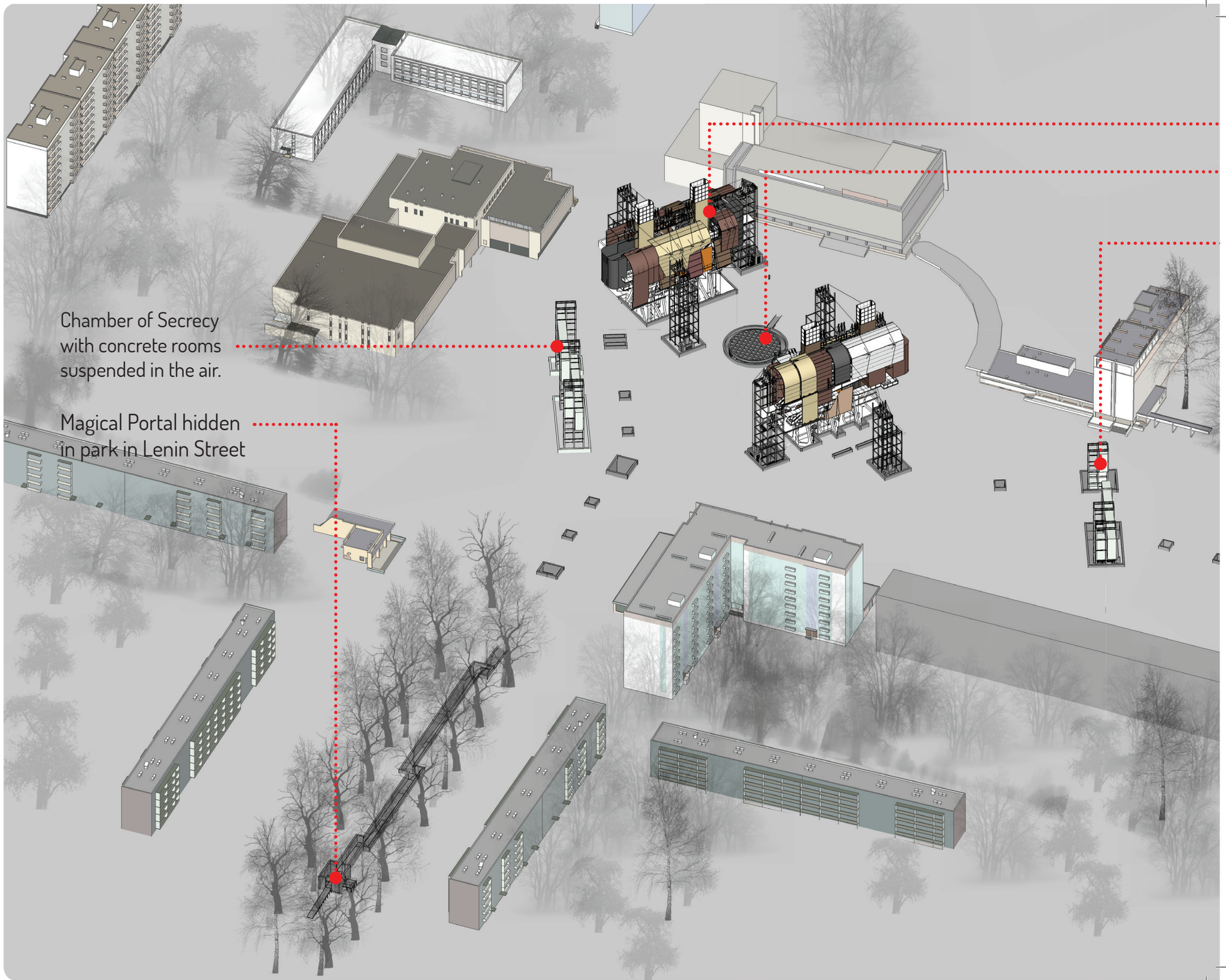




Figure 7.4: Graphical Site Plan indicating buildings and relation of Main Entrance Hall with curved walkway. Image underlay and contours derived from Google Maps (2013a: online).


Chamber of Secrecy
with concrete rooms
suspended in the air.
Magical Portal hidden
in park in Lenin Street

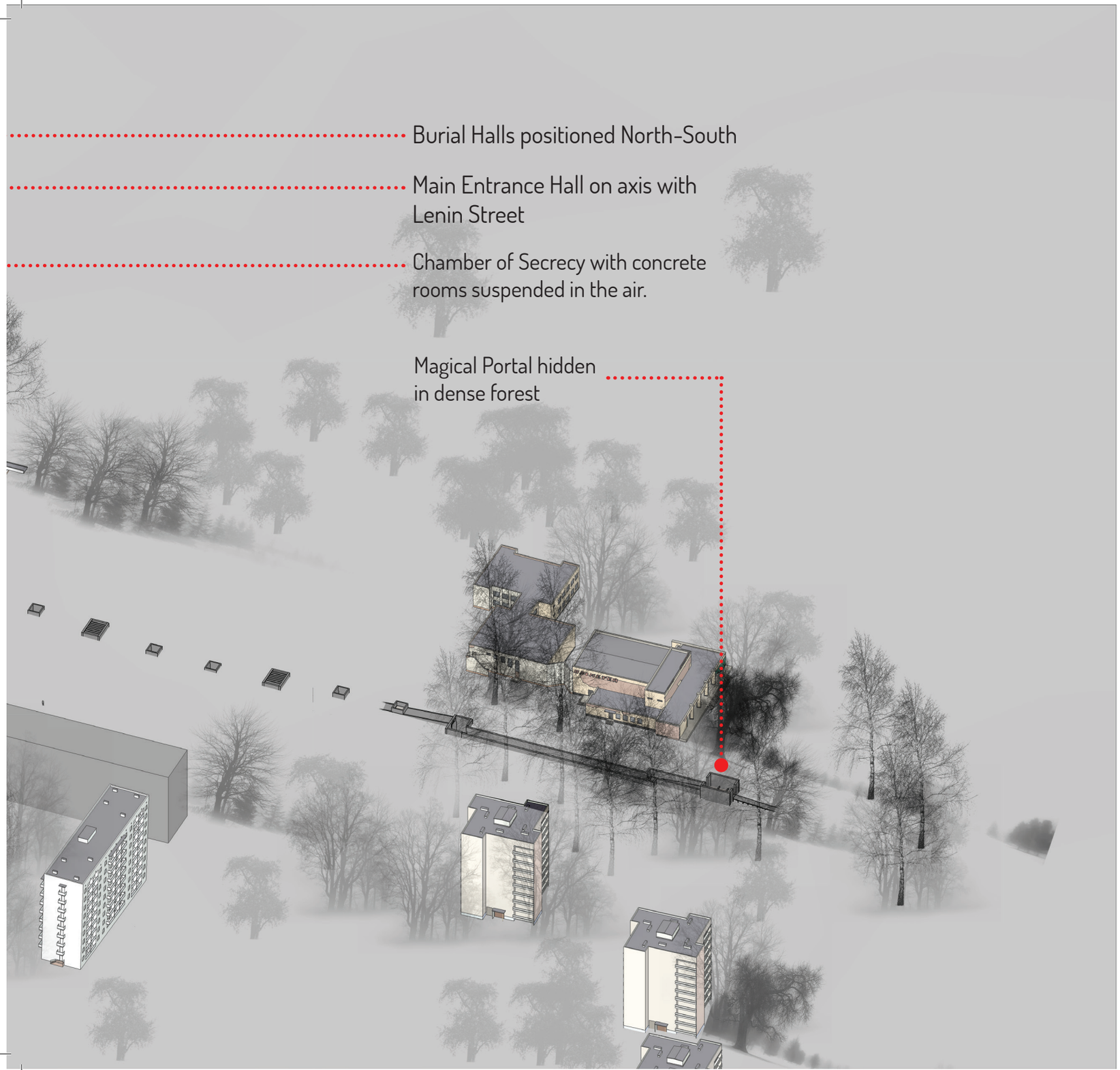


Figure 7.5: Three dimensional view over site.

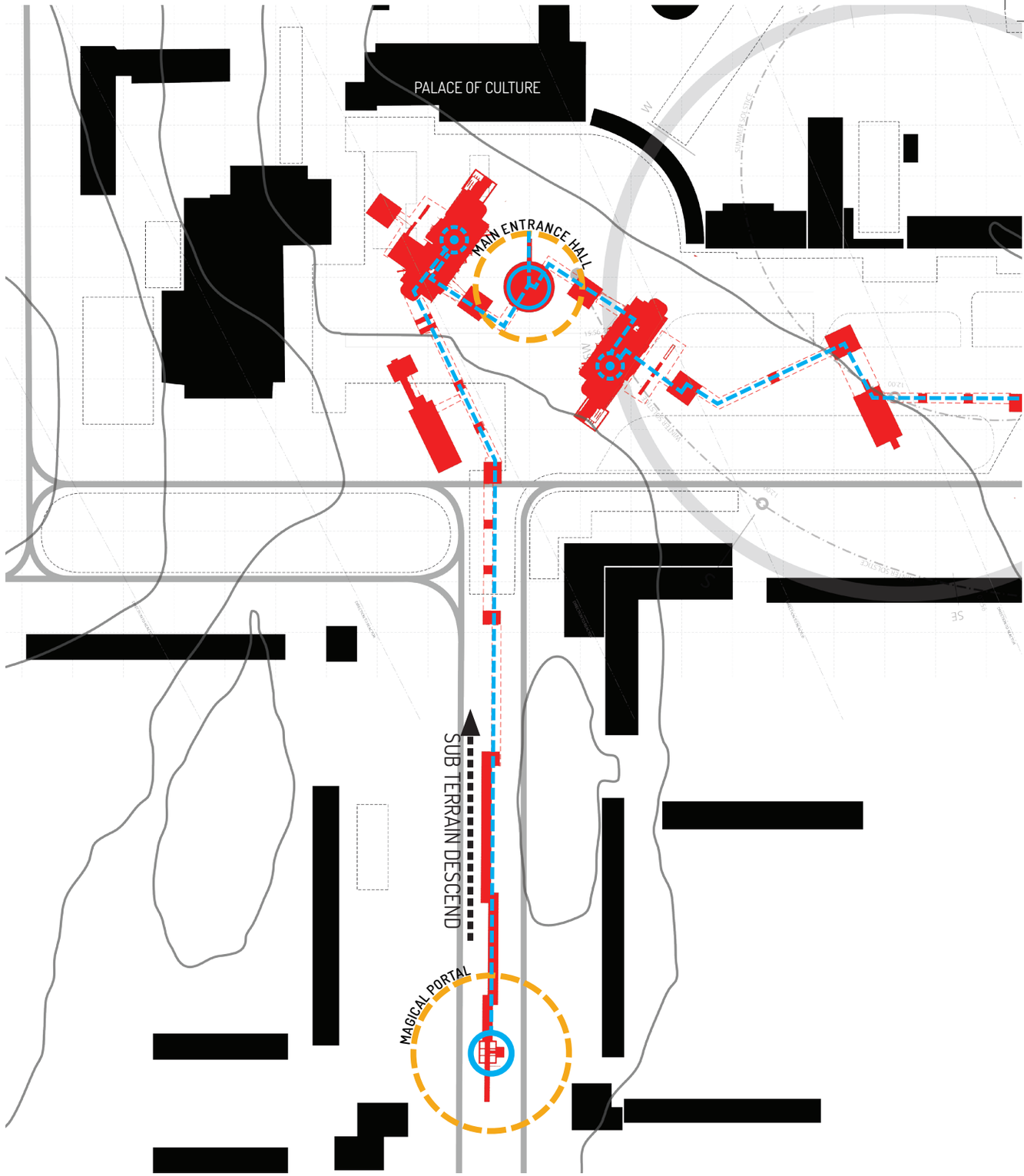
7.4 MAIN CIRCULATION

Main circulation is not limited to one specific entrance and the structure can be entered and experienced from multiple locations.

Entering the buildings will be done by first submerging into the holy earth and then experiencing any spaces that communicate verticality towards the sky. Entering the building can be done at three locations on the site, namely at the two Magical Portals and at the Main Entrance Hall (Figure 7.5). Circulation in the building can happen in any direction as any entrance can also be used as an exit.

The two Magical Portals will however be hidden in the dense forest, and the Main Entrance Hall on Lenin Square will most often be used as the main point of entry.

From the Main Entrance Hall there can be circulated to any of the two main Burial Halls. From there the circulation can happen in a vertical direction



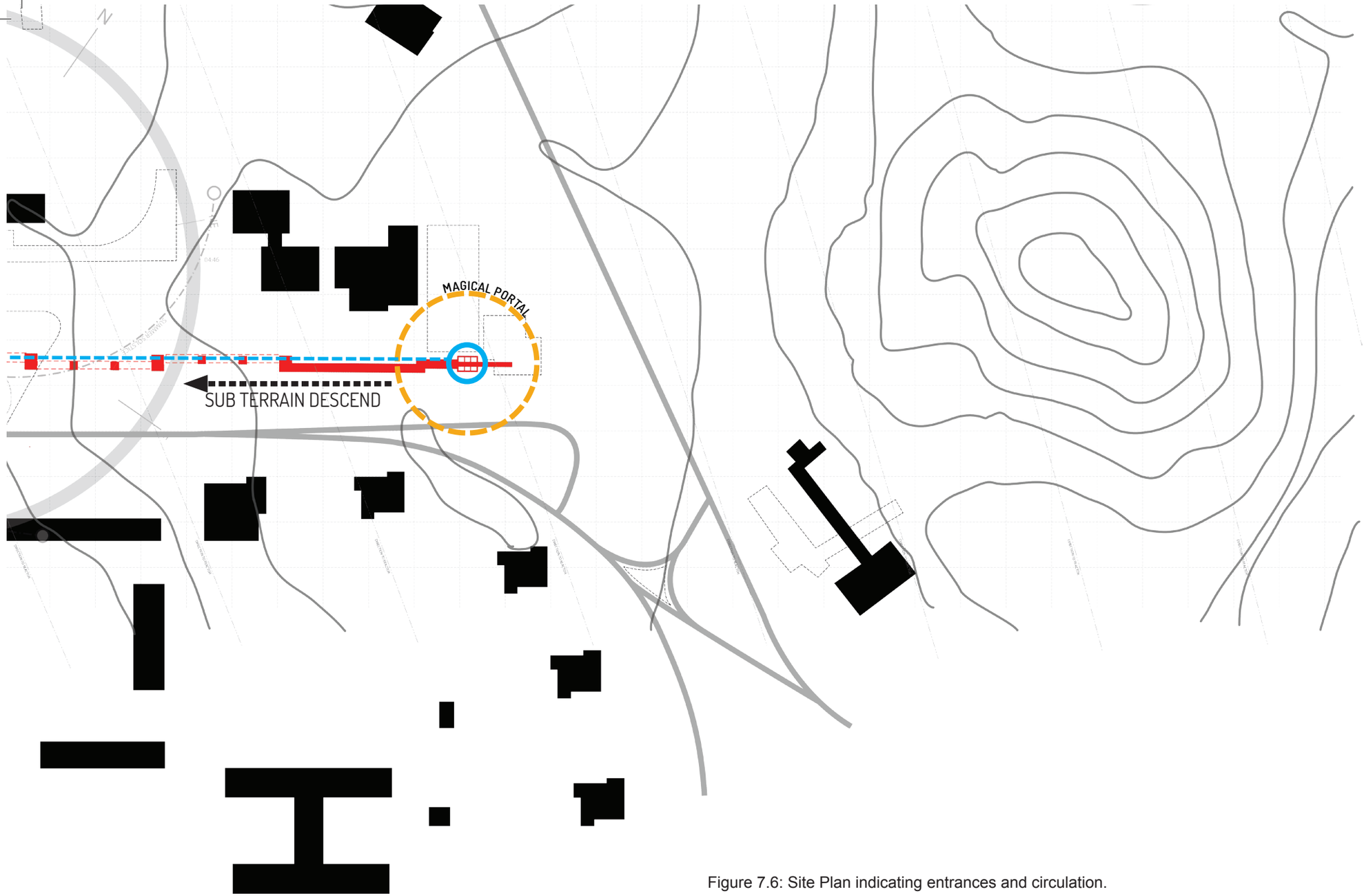


Figure 7.6: Site Plan indicating entrances and circulation.



towards the sky, or horizontal towards the Magical Portals passing the Chamber of Secrecy. This circulation pattern can also be reversed should the individual be able to locate the hidden Magical Portals. It goes without saying that once a Magical Portal have been located, an individual will have the option to enter and exit from any direction in the future.

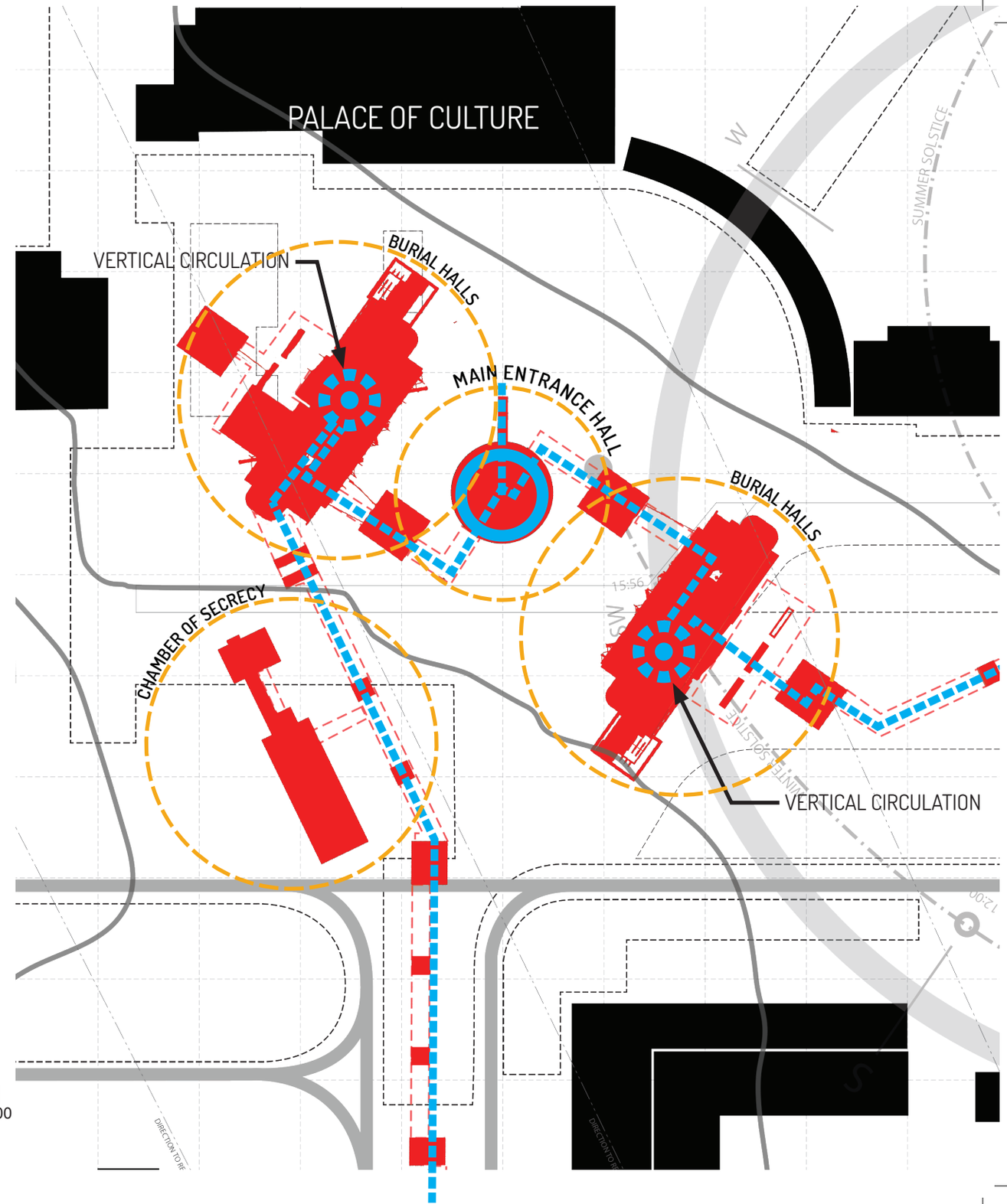


Figure 7.7: Enlarged site plan indicating entrances and vertical circulation.


HOTEL POLISSYA
CINEMA
CHAMBER OF SECRECY
MAGICAL PORTAL
SUB TERRAIN DESCEND
SUMMER SOLSTICE
04:46
12:00

7.5 AREA OF FOCUS

For the purposes of length, time and level of detail of this thesis, the area marked will be discussed in detail, while the other areas will be discussed only in brief.

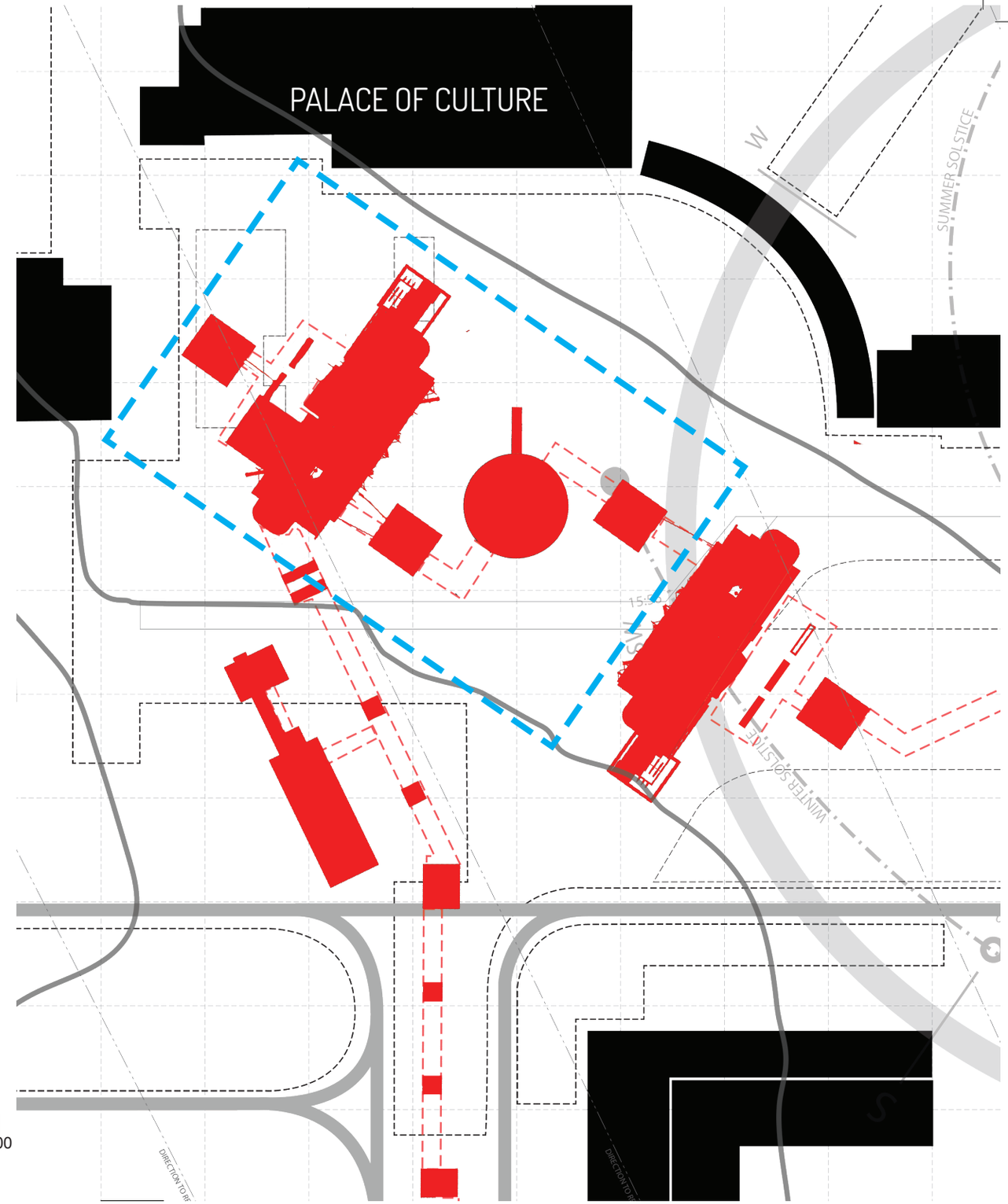


Figure 7.8: Enlarged site plan indicating detailed area to be discussed and documented in technical report.


HOTEL POLISSYA
CINEMA
12:00
04:46
SUMMER SOLSTICE

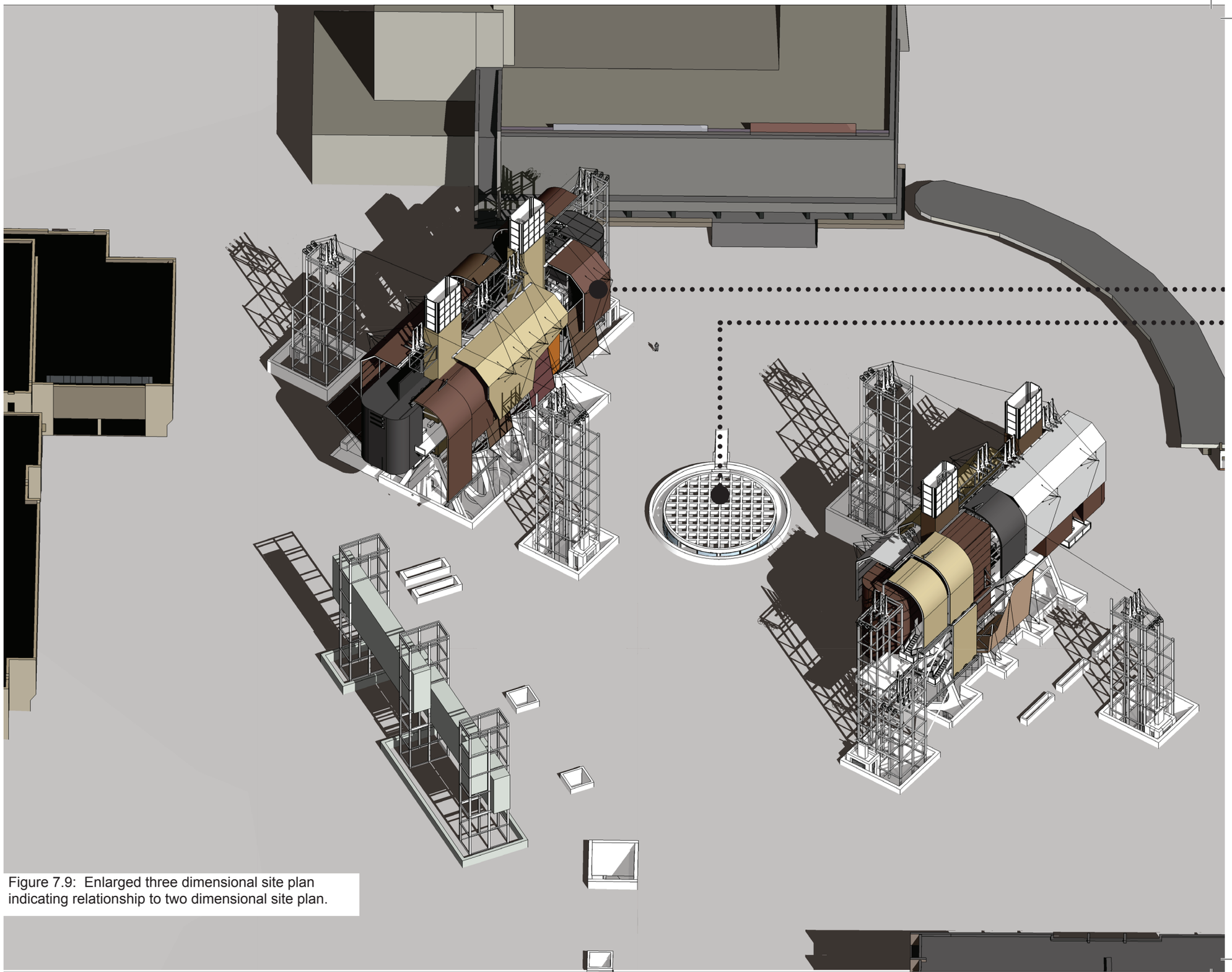
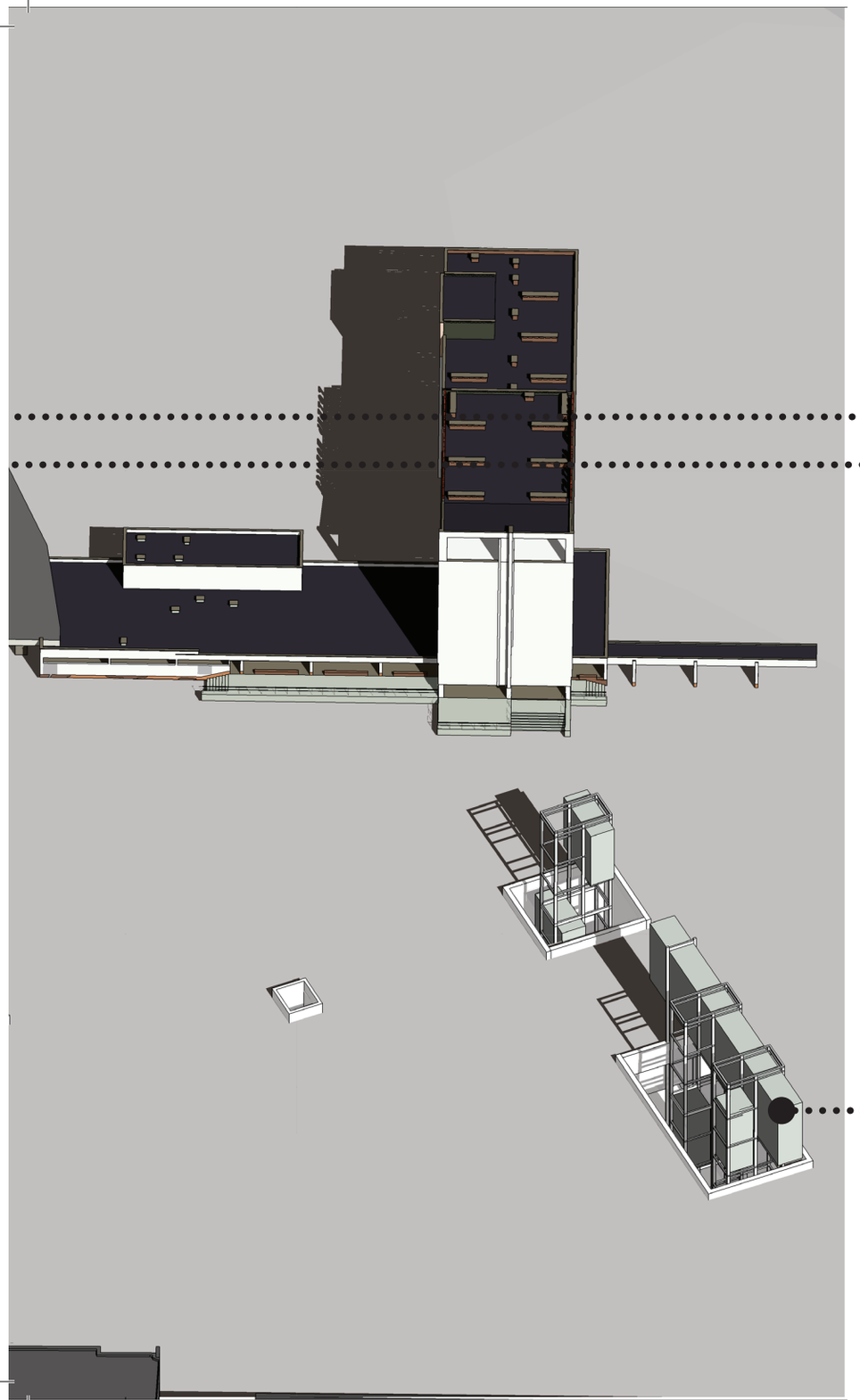


Figure 7.9: Enlarged three dimensional site plan indicating relationship to two dimensional site plan.



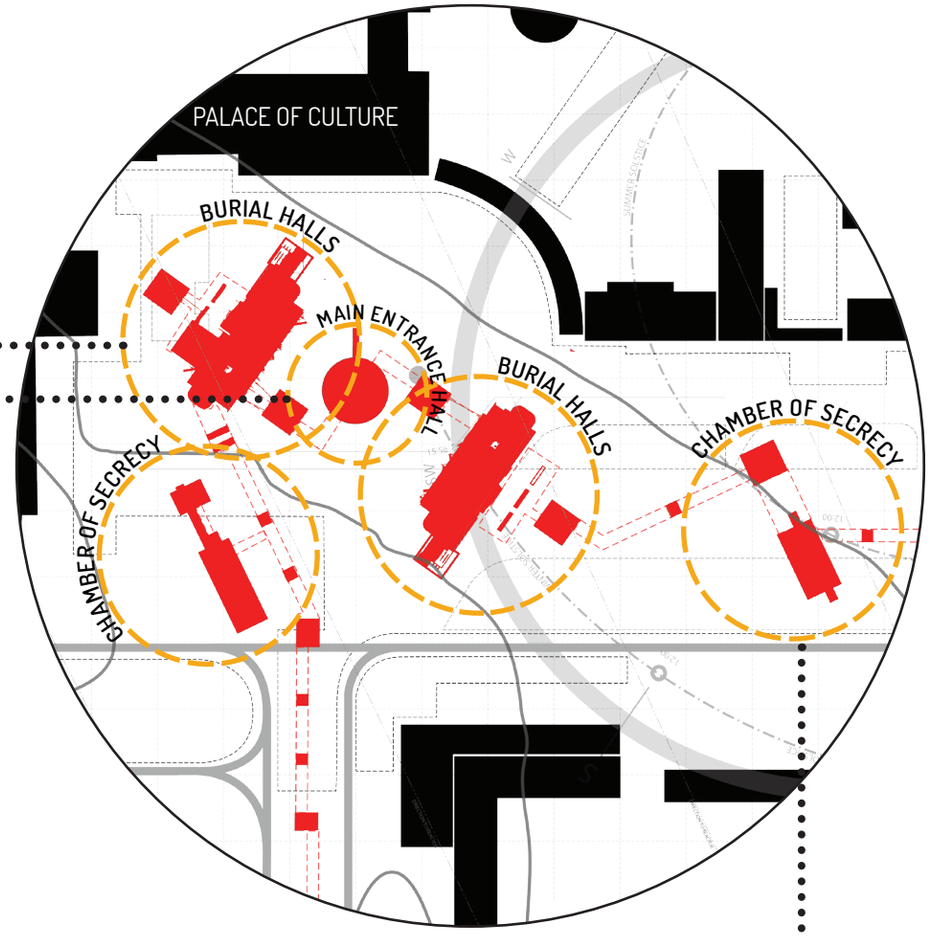


Figure 7.10: Site plan to be used through document as a key to orientate the reader of the thesis on the site.

7.6 MAIN ENTRANCE HALL

From above the circular Main Entrance Hall resembles a typical circular floor with an overlaid square grid as found in the reactor design of the Chernobyl Nuclear Power Plant. Acting as a memory trigger, rather than an exact scaled recreation of a nuclear reactor hall, the space below the grid where the nuclear reaction took place in the original reactor is now empty in the Main Entrance Hall.

Inhumane and vast, this space is designed to overpower a person with its emptiness. A space where a man will be faced with his mortality, while on the contrary experiencing a safe place where he is nurtured and protected by earth from radiation.

The Main Entrance Hall connects to the Burial Halls via underground hallways and reflection spaces acting as thresholds before entering these Halls.

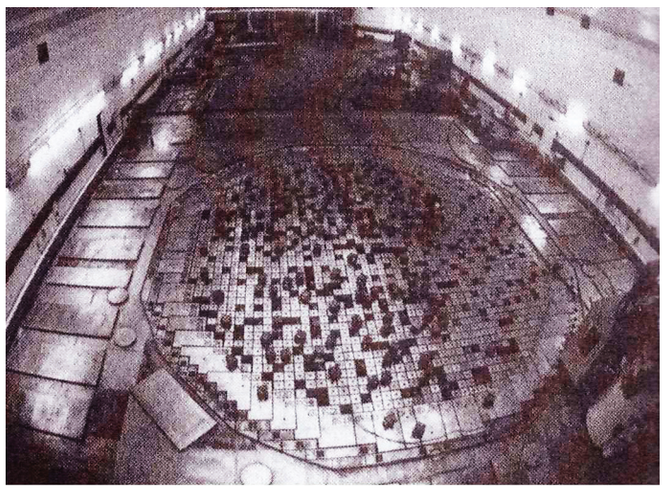


Figure 7.11: Reactor hall of Reactor 1, which is of similar design as Reactor 4 (Medvedev, 2011: 180).

Opposite page:
Figure 7.13: Main Entrance Hall looking upwards.

Towards Burial Halls

Circular Ramps down

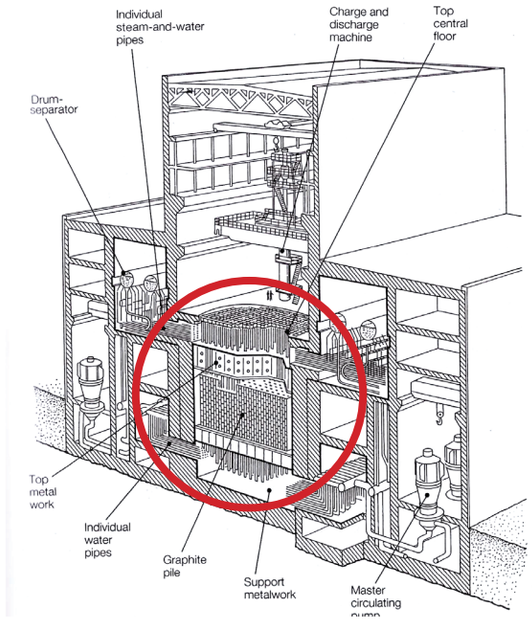
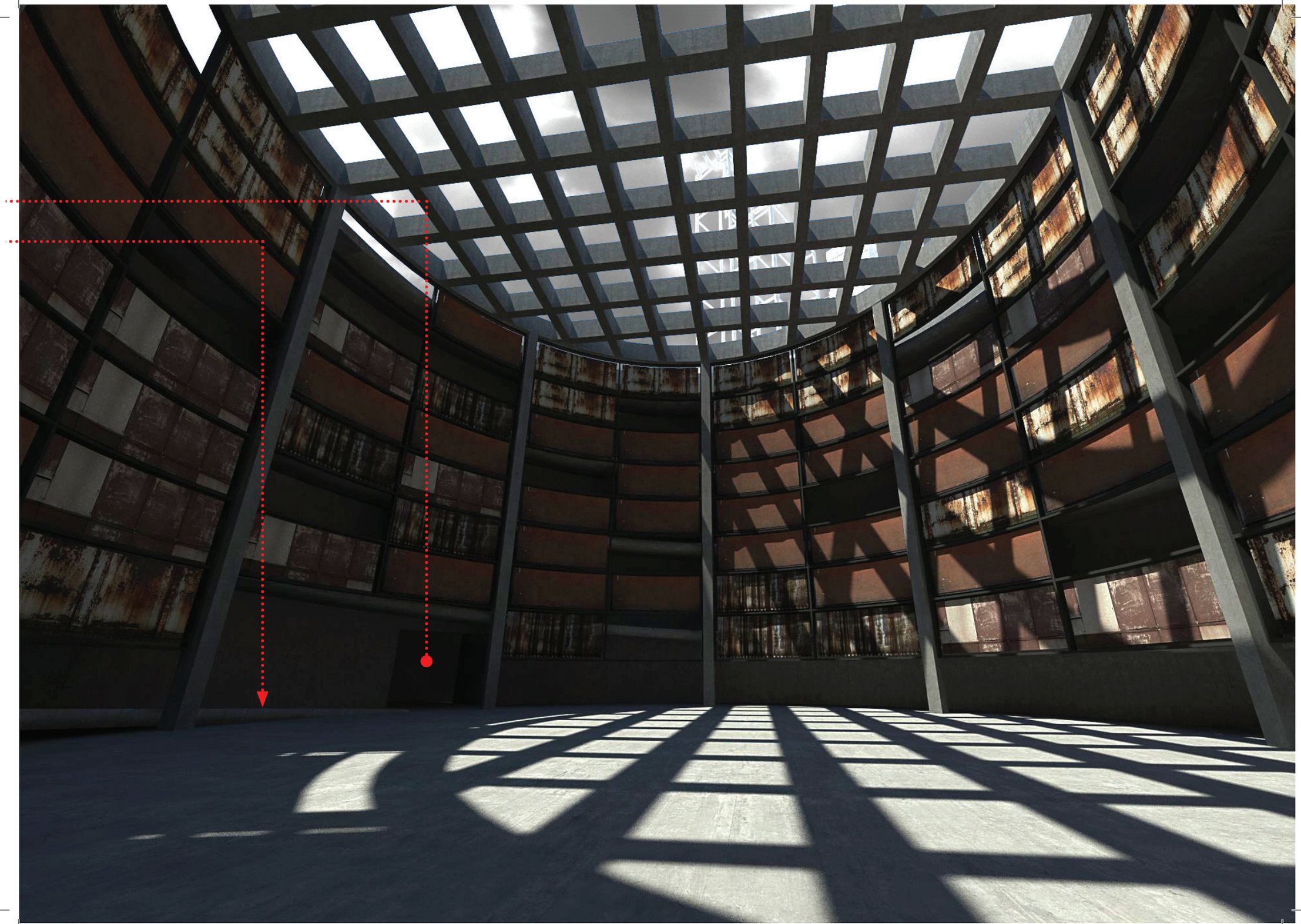
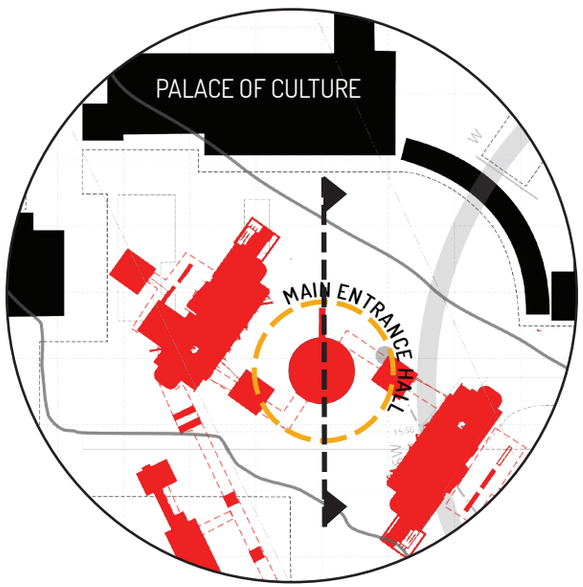


Figure 7.12: Section of Reactor highlighting the position of the nuclear reaction in a reactor (Medvedev, 2011: 7).







Steel ramp with mesh floor into Main Entrance Hall.

Pit to collect radioactive dirt from shoes of building users

Ramps down

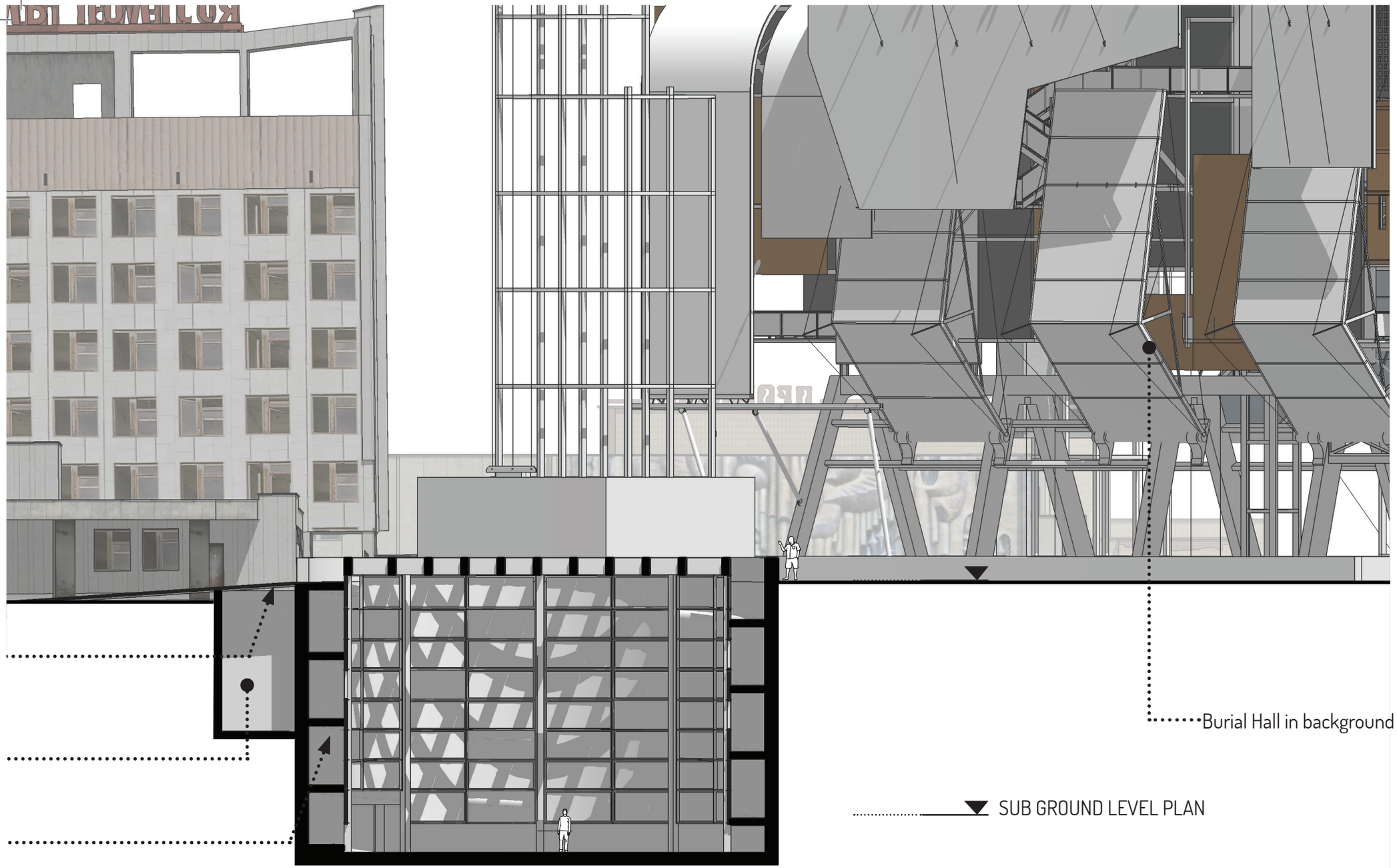
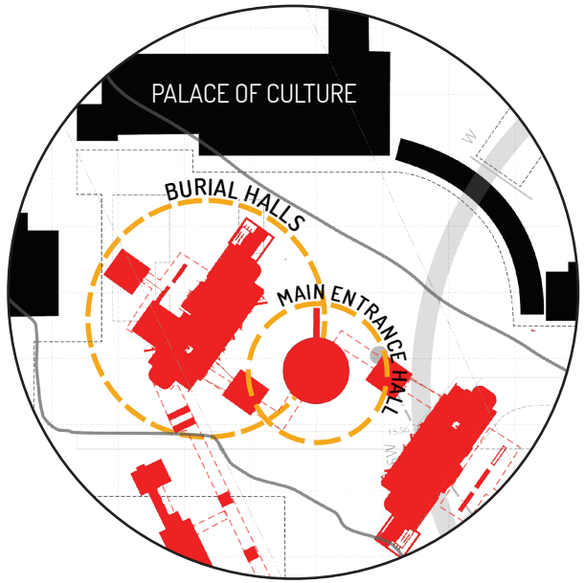


Figure 7.14: Section through Main Entrance Hall.



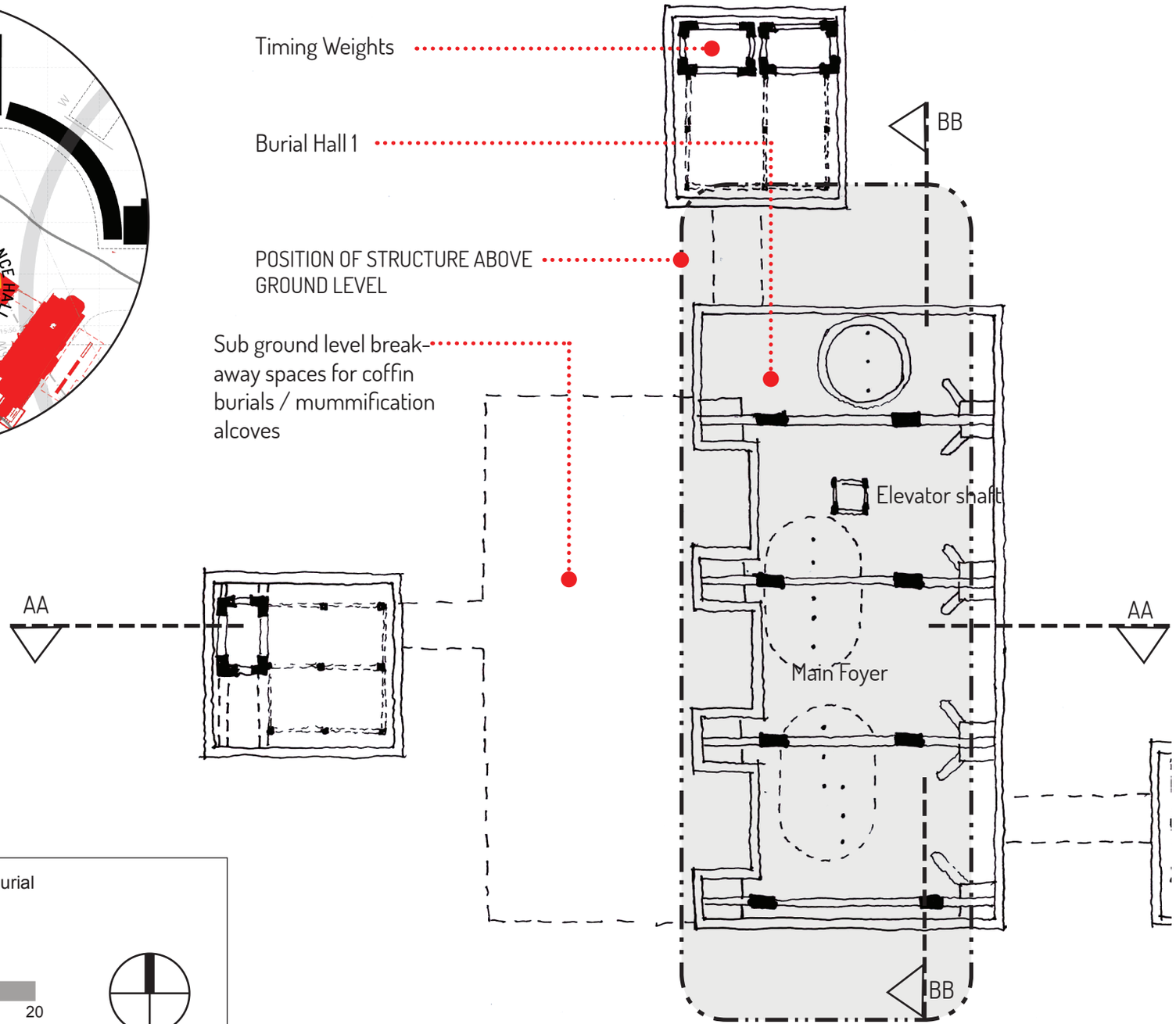
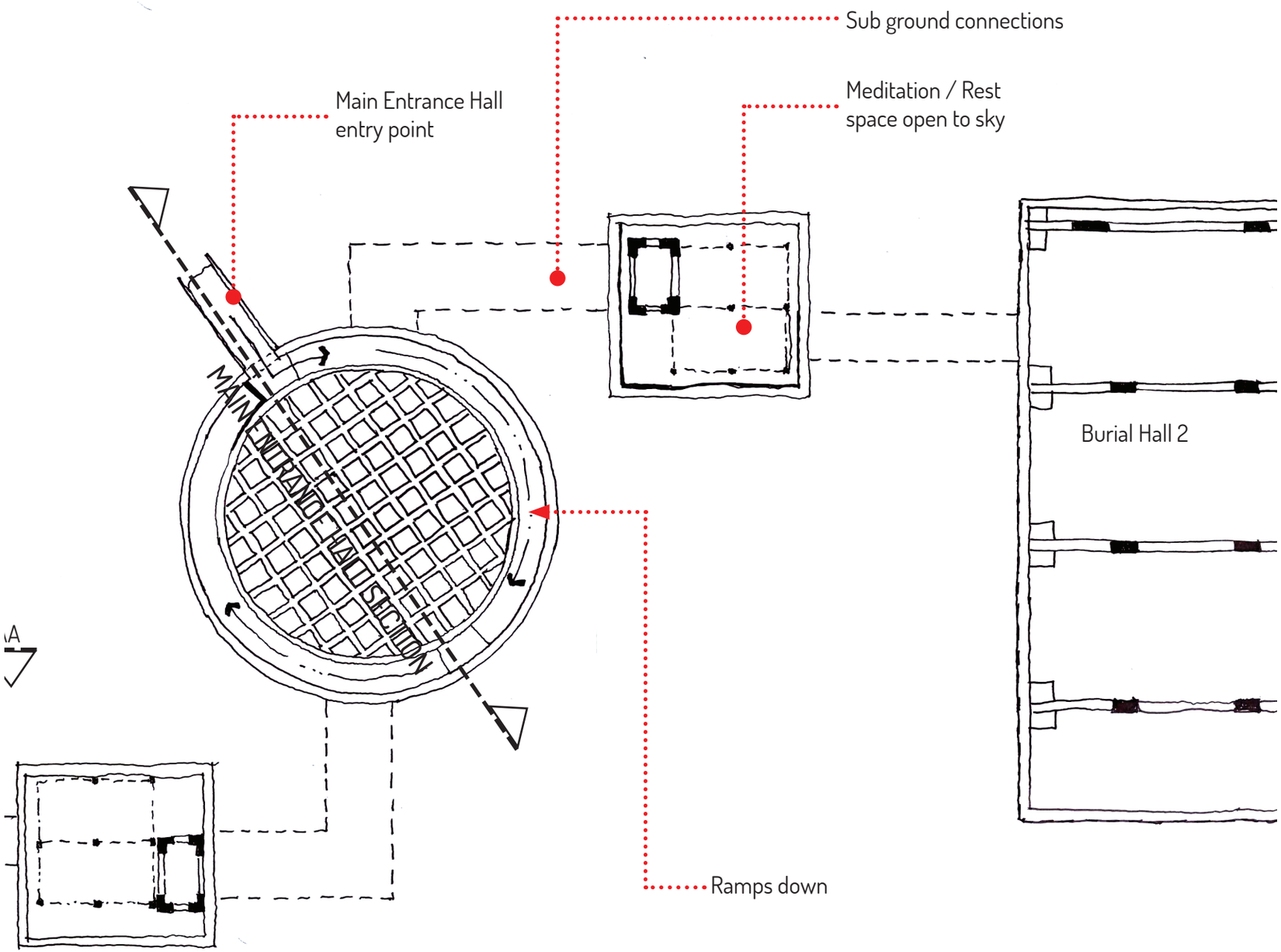
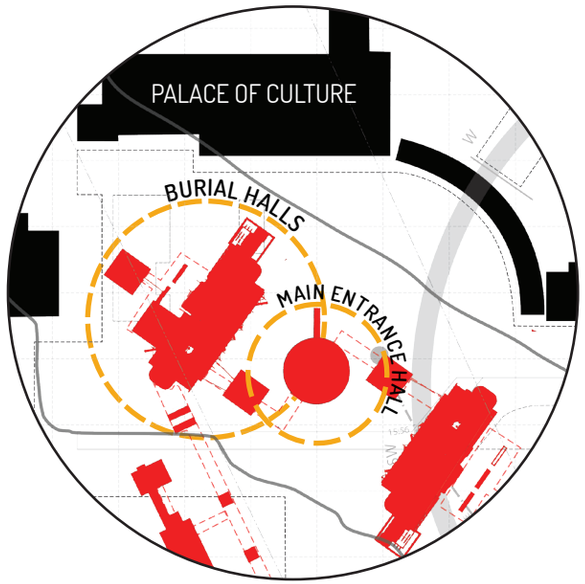


Figure 7.15: Ground plan of entrance and burial halls.

Meter
0 5 10 20


Sub ground connections
Main Entrance Hall
entry point
Meditation / Rest
space open to sky
MAIN ENTRANCE HALL SHOWN
Burial Hall 2
Ramps down



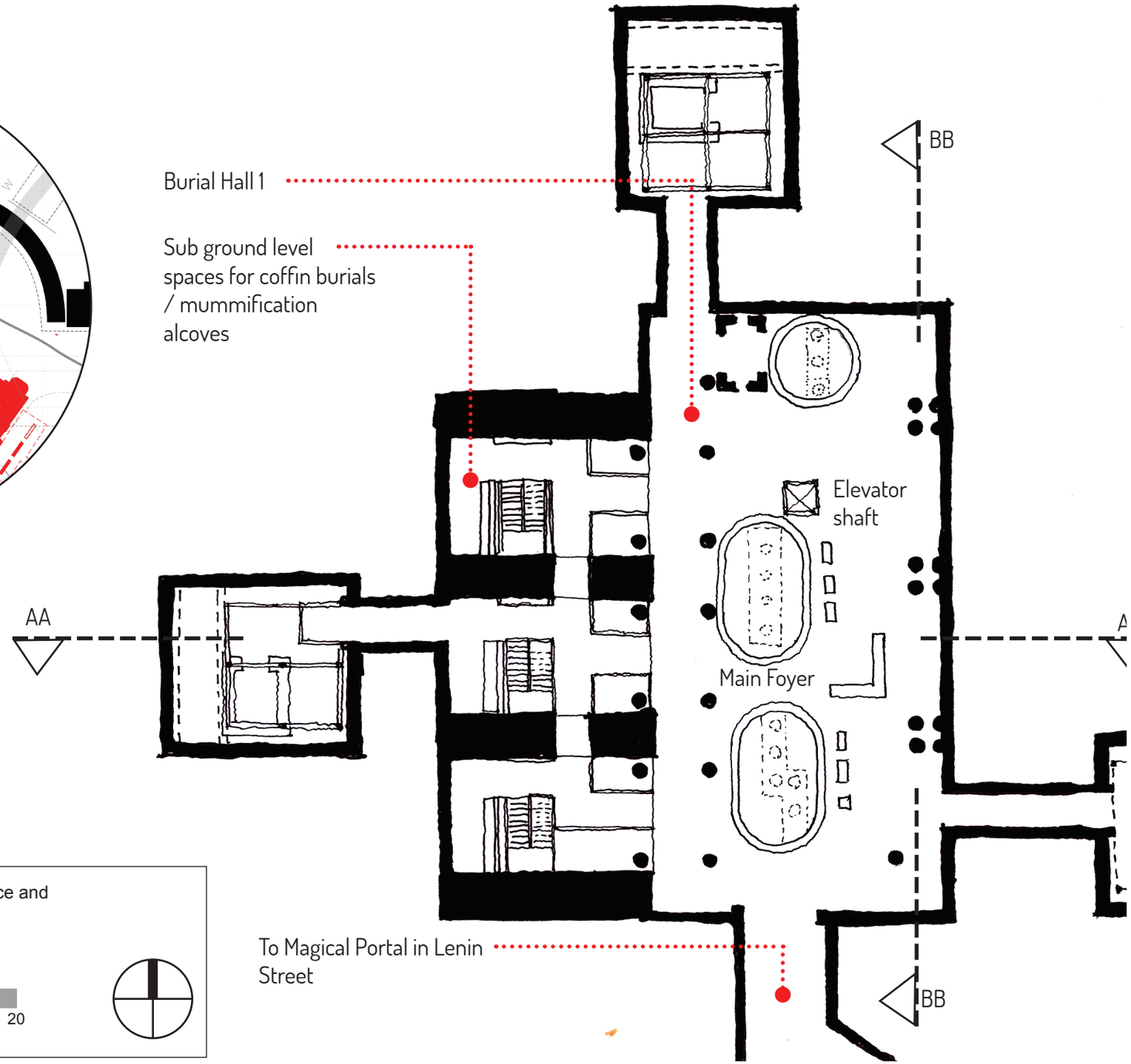
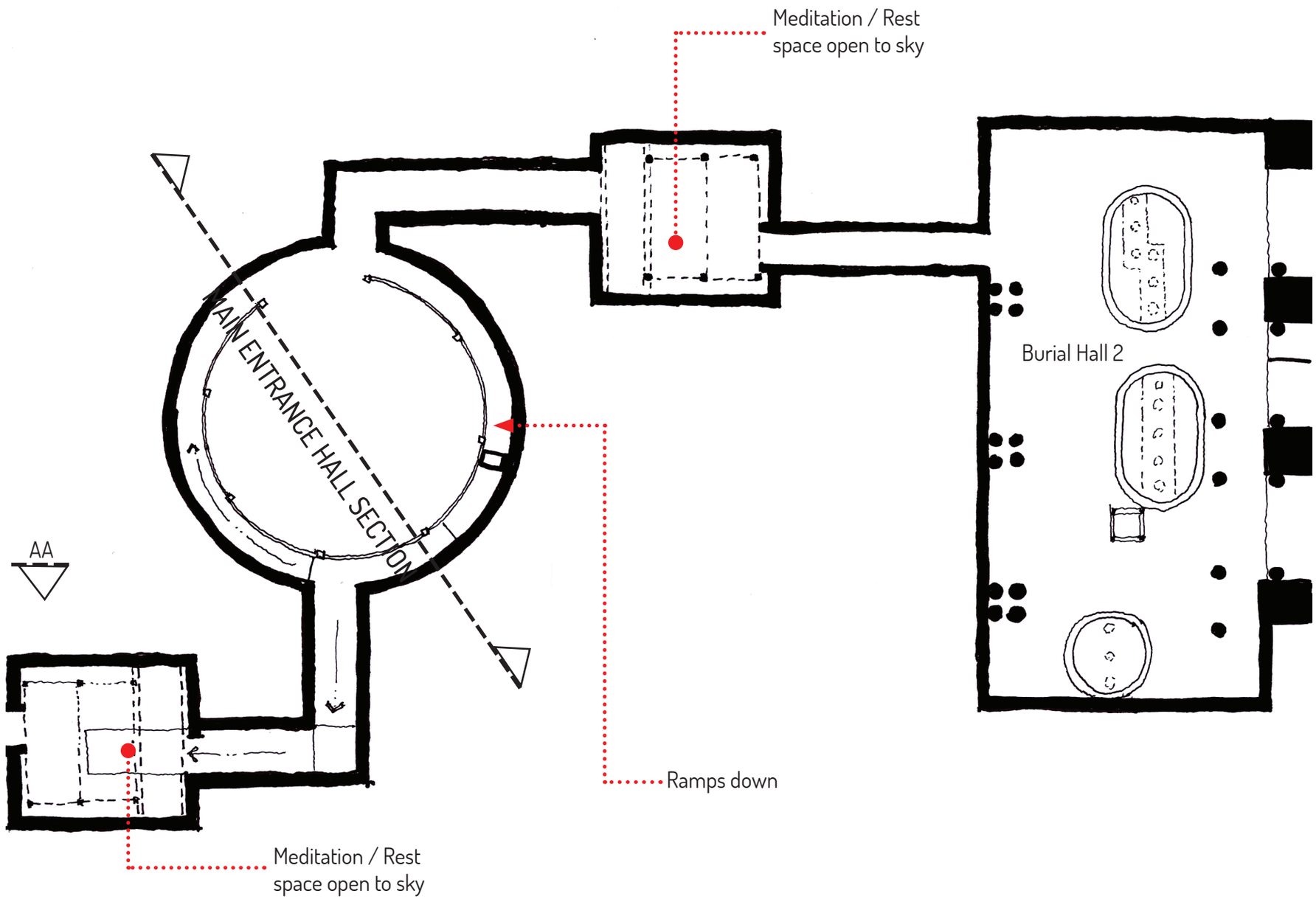


Figure 7.16: Sub ground level of Main Entrance and Burial Halls.

Meter
0 5 10 20


Meditation / Rest
space open to sky
MAIN ENTRANCE HALL SECTION
AA
Burial Hall 2
Ramps down
Meditation / Rest
space open to sky

7.7 BURIAL HALLS

Being discussed first in section and then on plan for purposes of explaining meaning, but also as this is the way it was designed. From section - making volume, to plan - making function, fusing earth and sky while the building has a magical life of its own. The user is protected from the radiation in that underground they are deep enough to be *underneath* the radiation line, thus protected by earth and the concrete of the building. In the air they are removed far enough from the ground line to be out of danger, protected again by *sky*.

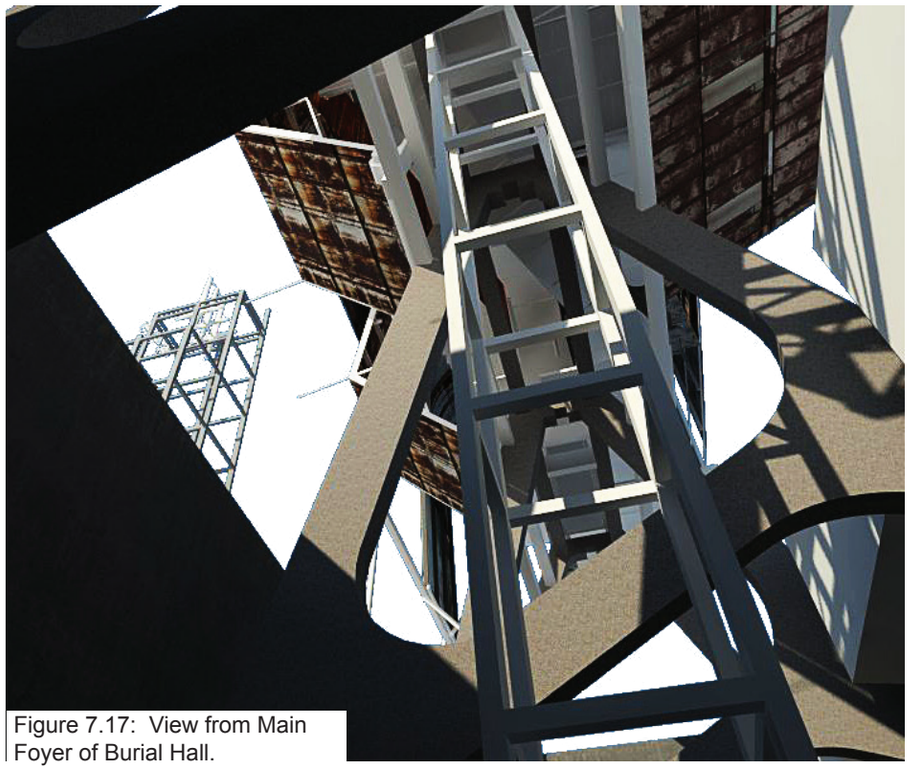
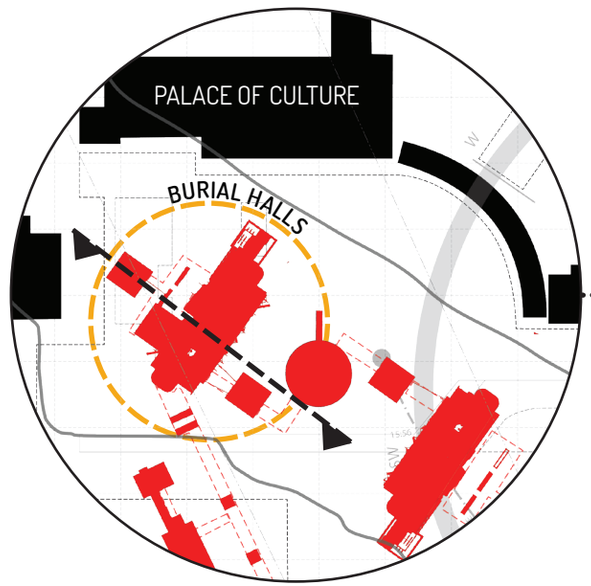


Figure 7.17: View from Main Foyer of Burial Hall.

Tectonic structure in the sky supported on concrete frames to communicate an abstract growth out of the landscape.

Cables under ground level control building morphology above ground. Dynamic tension between earth and sky created.

Clean, safe underground place where meditation or grieving of both people and landscape can take place.



SECTION AA

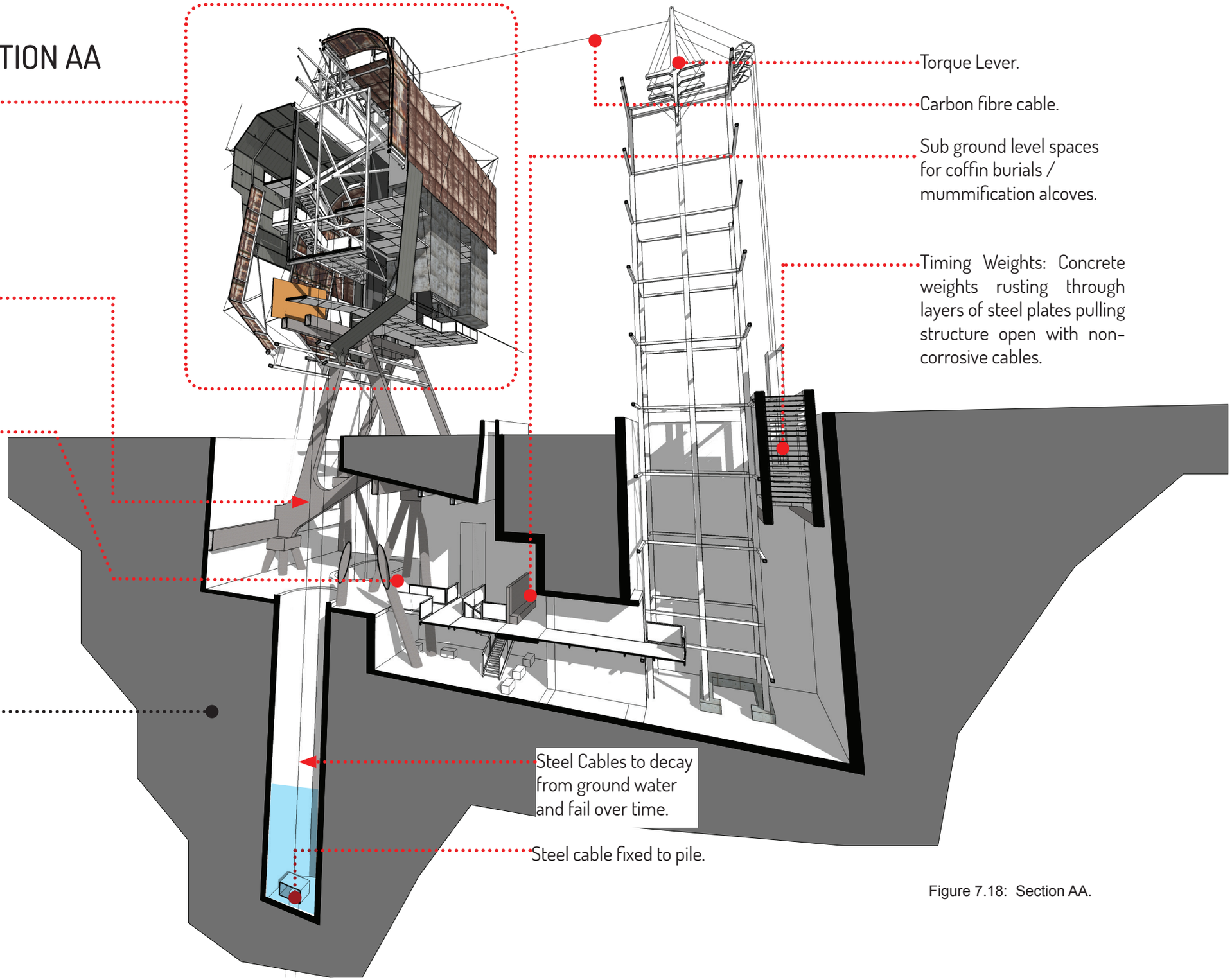


Figure 7.18: Section AA.

Rotating this book clockwise illustrates the relationship and tension the building creates between earth and sky. Users enter the building by first going through the ground line and then entering the Main Foyer of the Burial Halls. This space is large, empty and deep. Communicating an ‘inhumaneness’ offset by the strong urge to gaze upwards towards the tectonic structure that exists seemingly beyond the users current realm. In the floor of this foyer openings descend deep into the earth to take the cables that keep the structure in tension. These cables descend and disappear into the darkness of the earth communicating cables that seem to be pulled down by an invisible magical *force*.

‘Unreachable and in the heavens’ - this would be the first thought when entering the Main Foyer. Through further investigation the structure will communicate subtle requests as to the exploration it needs from the user. Break-away burial spaces give way into the holy earth while a subtle elevator shaft acts as a connection to travel from earth to sky.

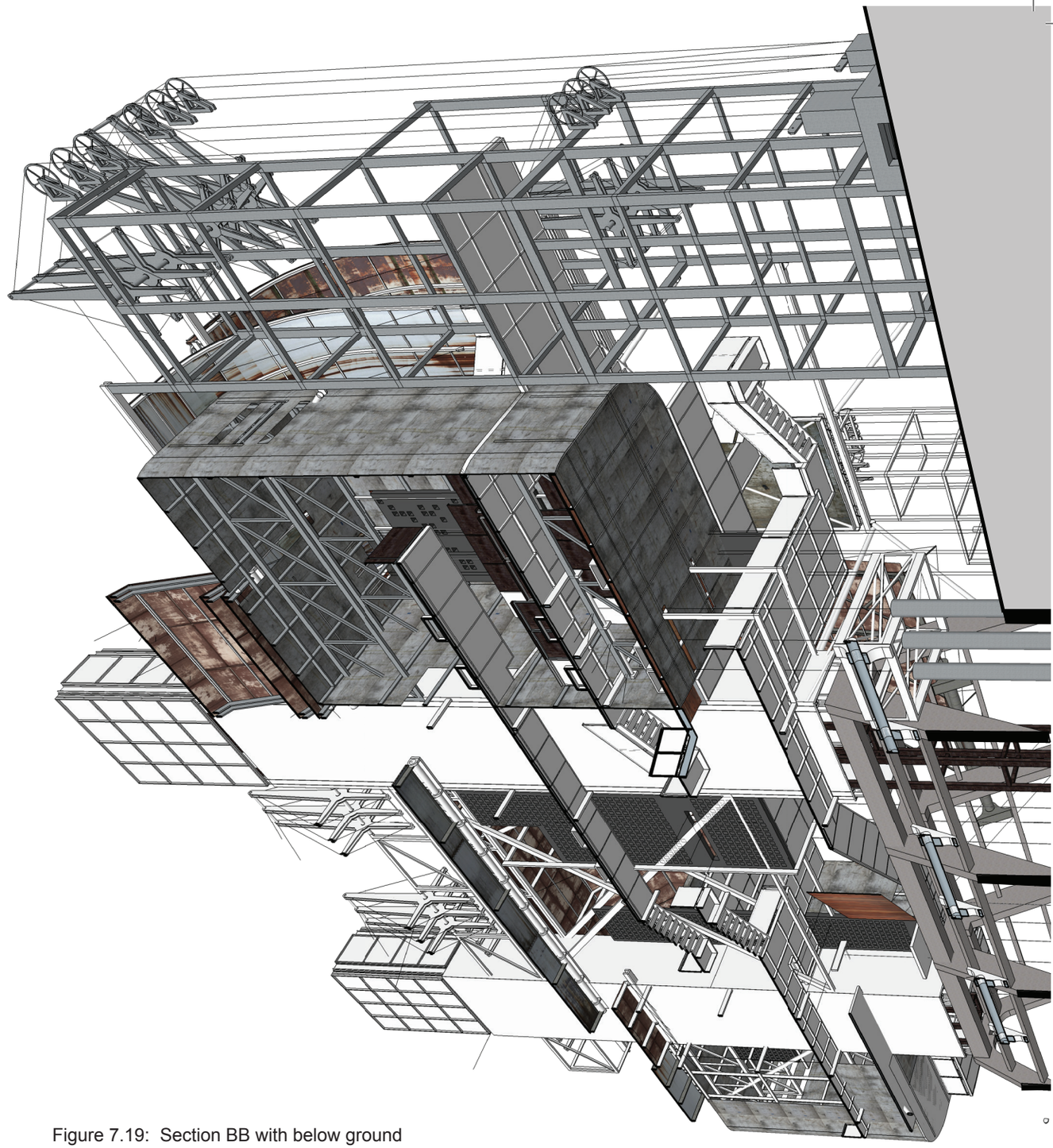
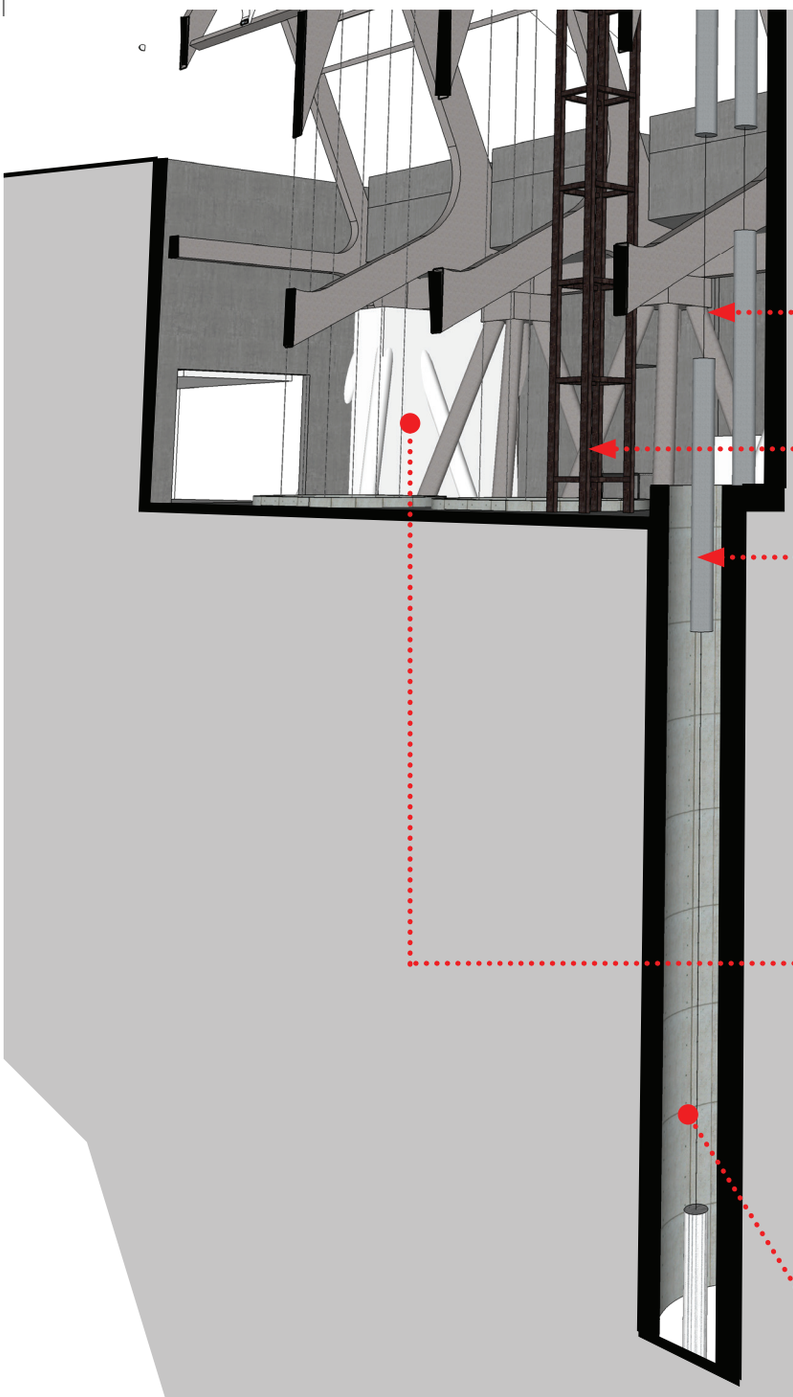


Figure 7.19: Section BB with below ground elements discussed.



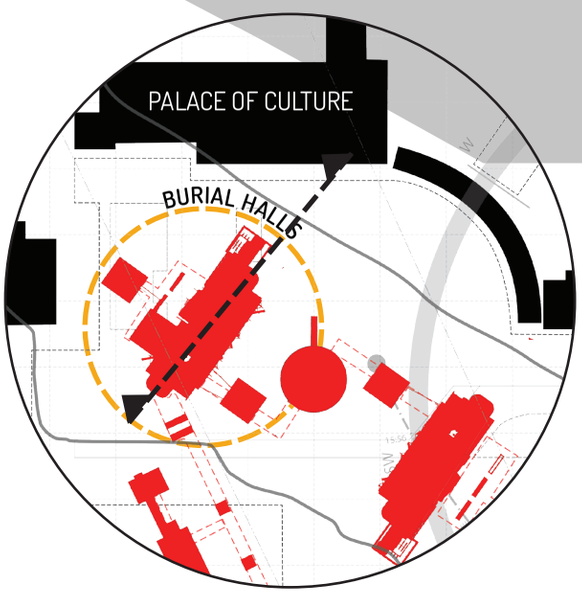
Even though the cables keeping facades in tension are very subtle, the connection they create between earth and sky, man and magical are very strong.

Elevator shaft

Concrete counter-balance weights on cables to prevent panels from falling violently when cable fails. Counter weights are a small percentage lighter that the panel to give a delayed falling motion.

Main Foyer to evoke emotions of a space that is inhumane, but still creates safety from radiation. Occupied by a being that is not human, but communicates with humans. Submerged into **earth** but evokes gazing to the **sky**.

Openings in floor of Main Foyer to take cables that tension structure that fail over time. As the cables descend into the earth they disappear into darkness creating the impression that a magical force keeps it in tension.



SECTION BB

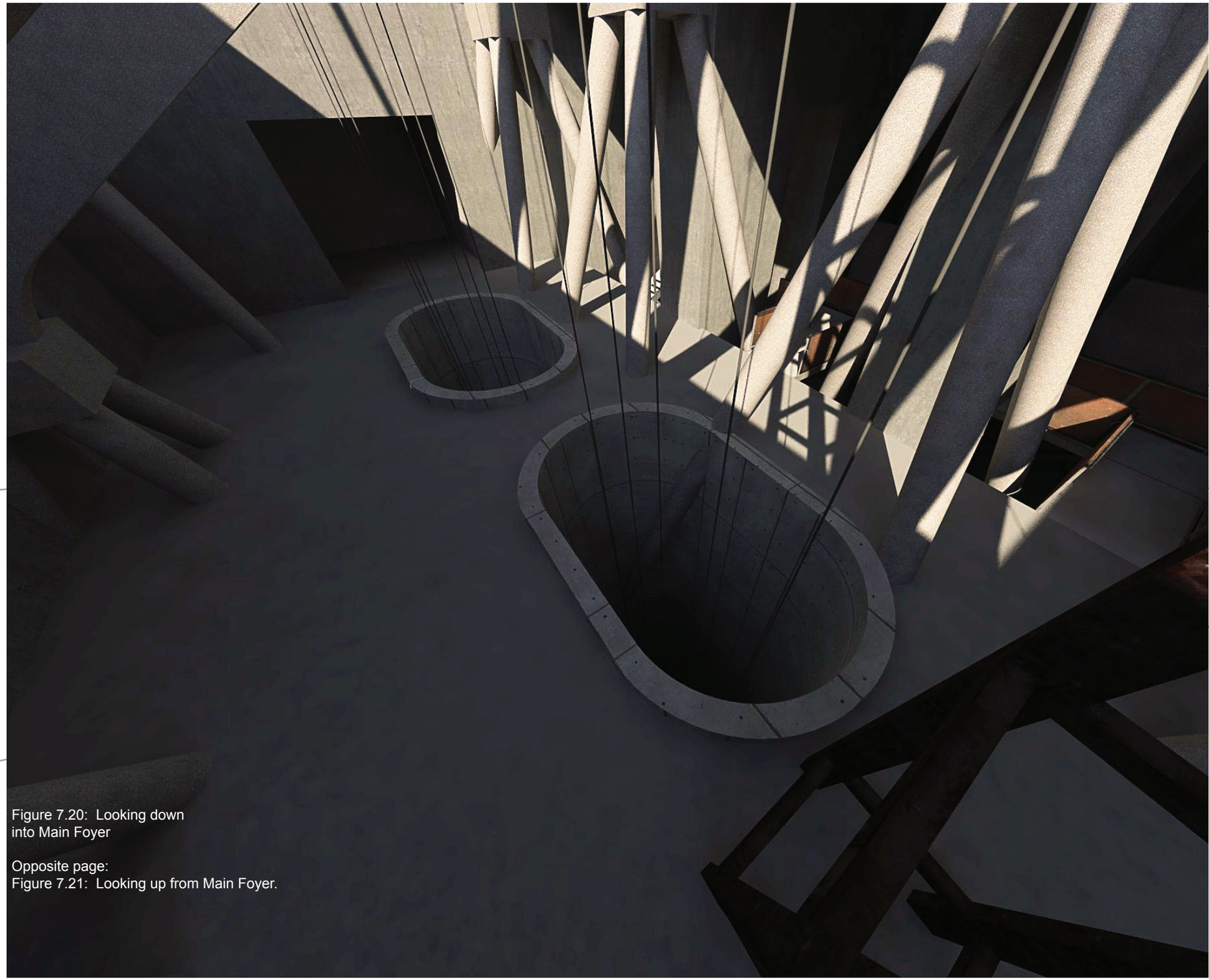
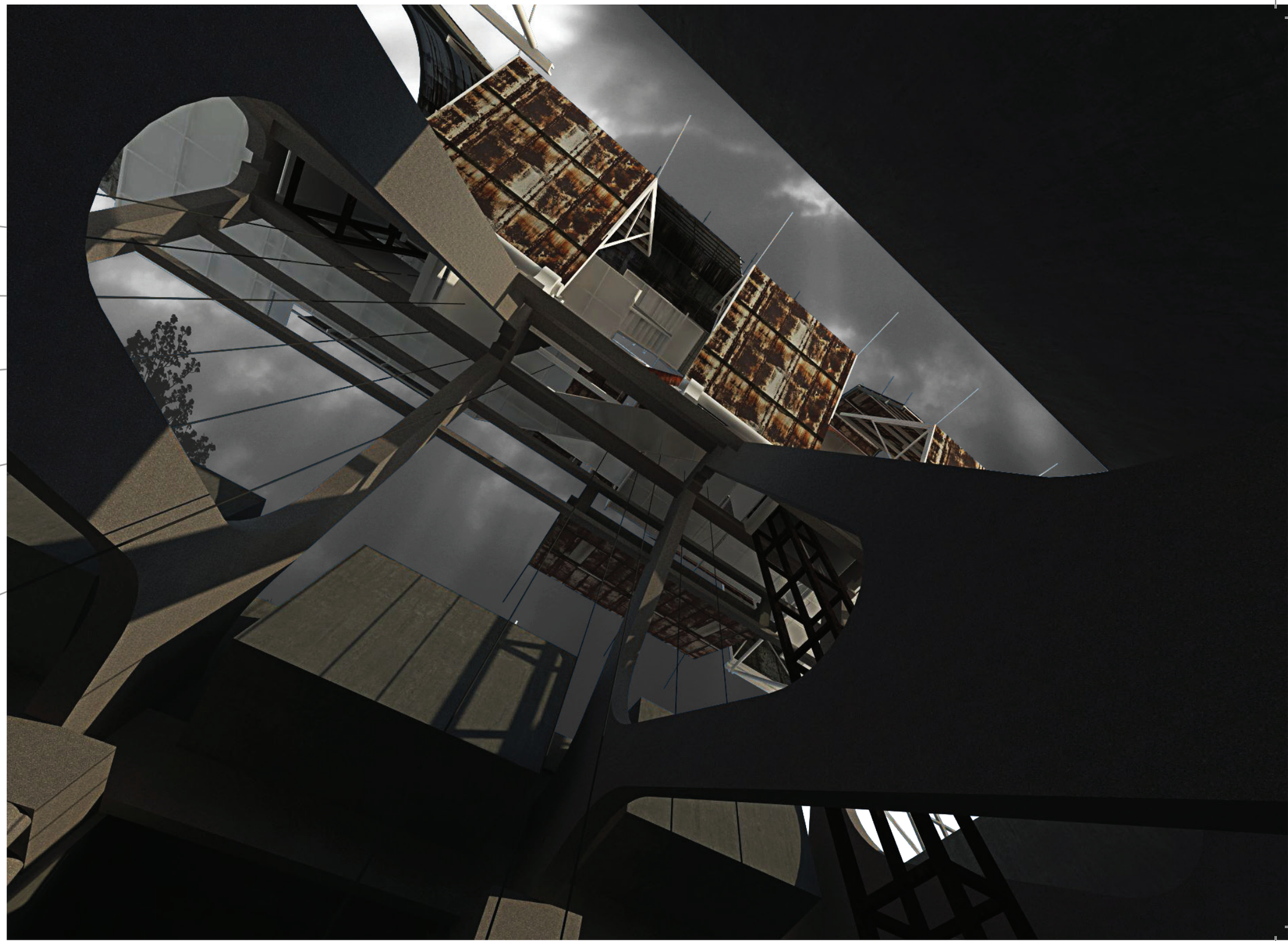


Figure 7.20: Looking down into Main Foyer

Opposite page:
Figure 7.21: Looking up from Main Foyer.



Closed burial chamber. A dark space with light filtering through the unused niches.

Open wall with niches

A Raumplan floor level approach were taken to create unique spaces throughout the building. Elevators connect to all levels.

Wandering the building the user will get glimpses of the landscape through the shells of the building. Temperature swings and material decay will cause this building to make sounds. It will have a life **force** and **talk** to the users.

Walls with niches in burial chambers. As the building opens up the wind will flow through these chambers too. Some ashes will remain in the chambers and some will even fall into the Main Foyer. This will add to the continuous significance of the building after it has opened and released the ashes.

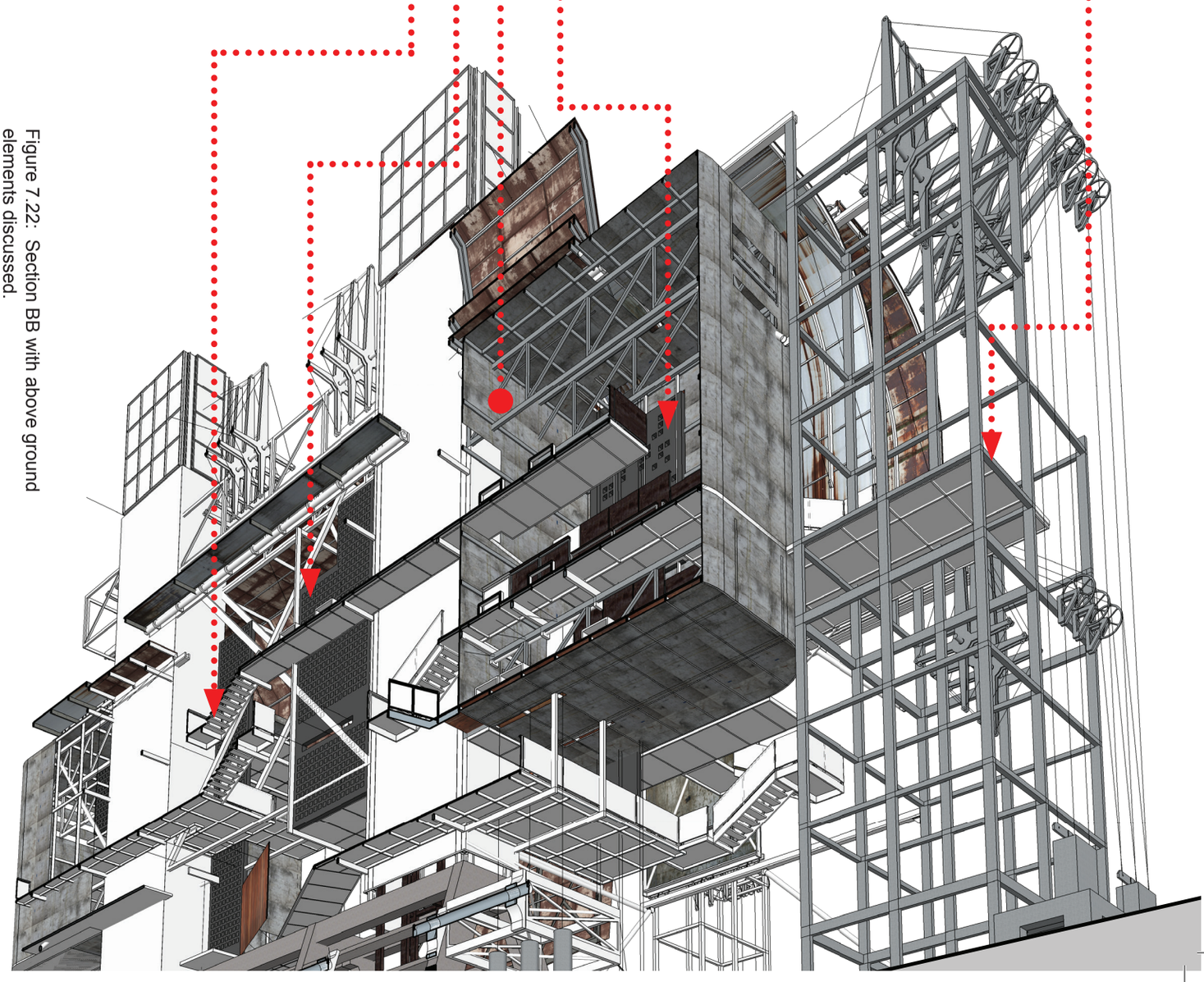
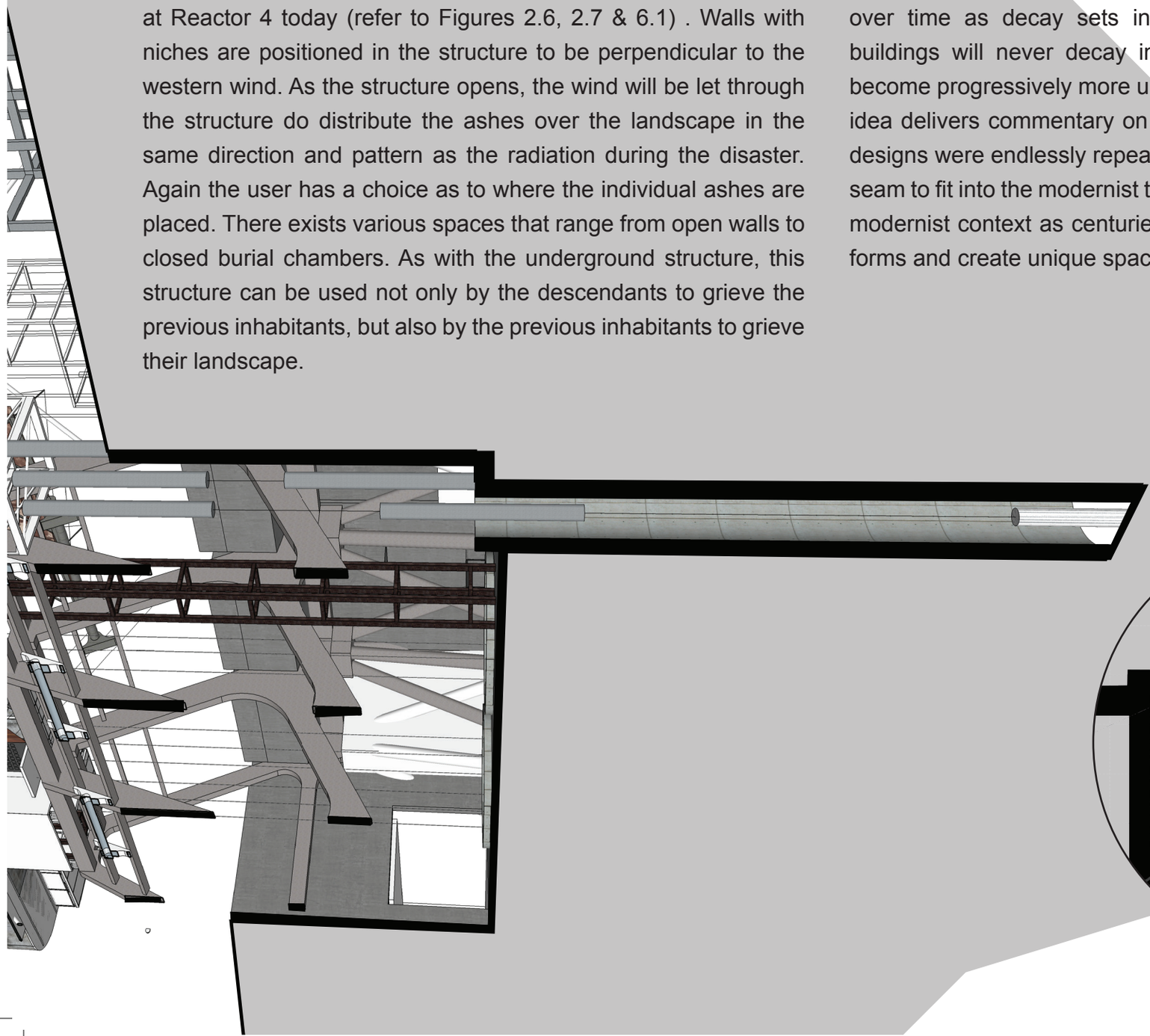


Figure 7.22: Section BB with above ground elements discussed.

Above the ground line, the structure takes on a much more tectonic quality that addresses the tectonic expression seen at Reactor 4 today (refer to Figures 2.6, 2.7 & 6.1) . Walls with niches are positioned in the structure to be perpendicular to the western wind. As the structure opens, the wind will be let through the structure do distribute the ashes over the landscape in the same direction and pattern as the radiation during the disaster. Again the user has a choice as to where the individual ashes are placed. There exists various spaces that range from open walls to closed burial chambers. As with the underground structure, this structure can be used not only by the descendants to grieve the previous inhabitants, but also by the previous inhabitants to grieve their landscape.

Although the two Burial Halls opposing each other will consist of the same design language (refer to Figure 7.9), they will change over time as decay sets in. Because the tectonics of these buildings will never decay in exact unison, these Burial Halls become progressively more unique as the centuries pass by. This idea delivers commentary on the modernist town where building designs were endlessly repeated. The Burial Halls will in essence seam to fit into the modernist town but they will break free from the modernist context as centuries elapse and they take on different forms and create unique spaces.



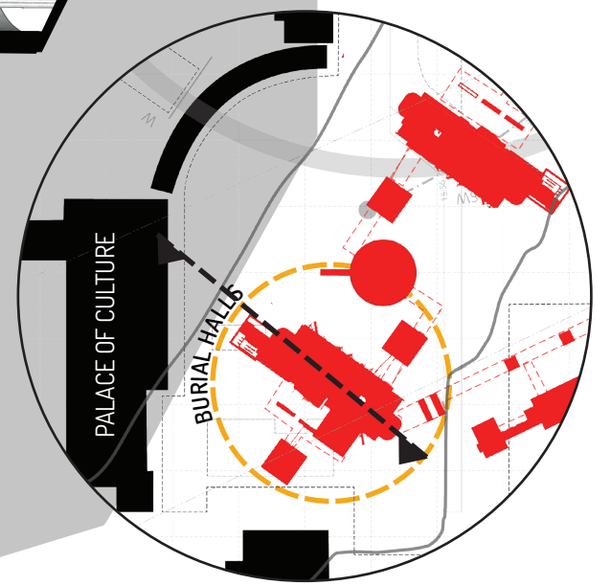
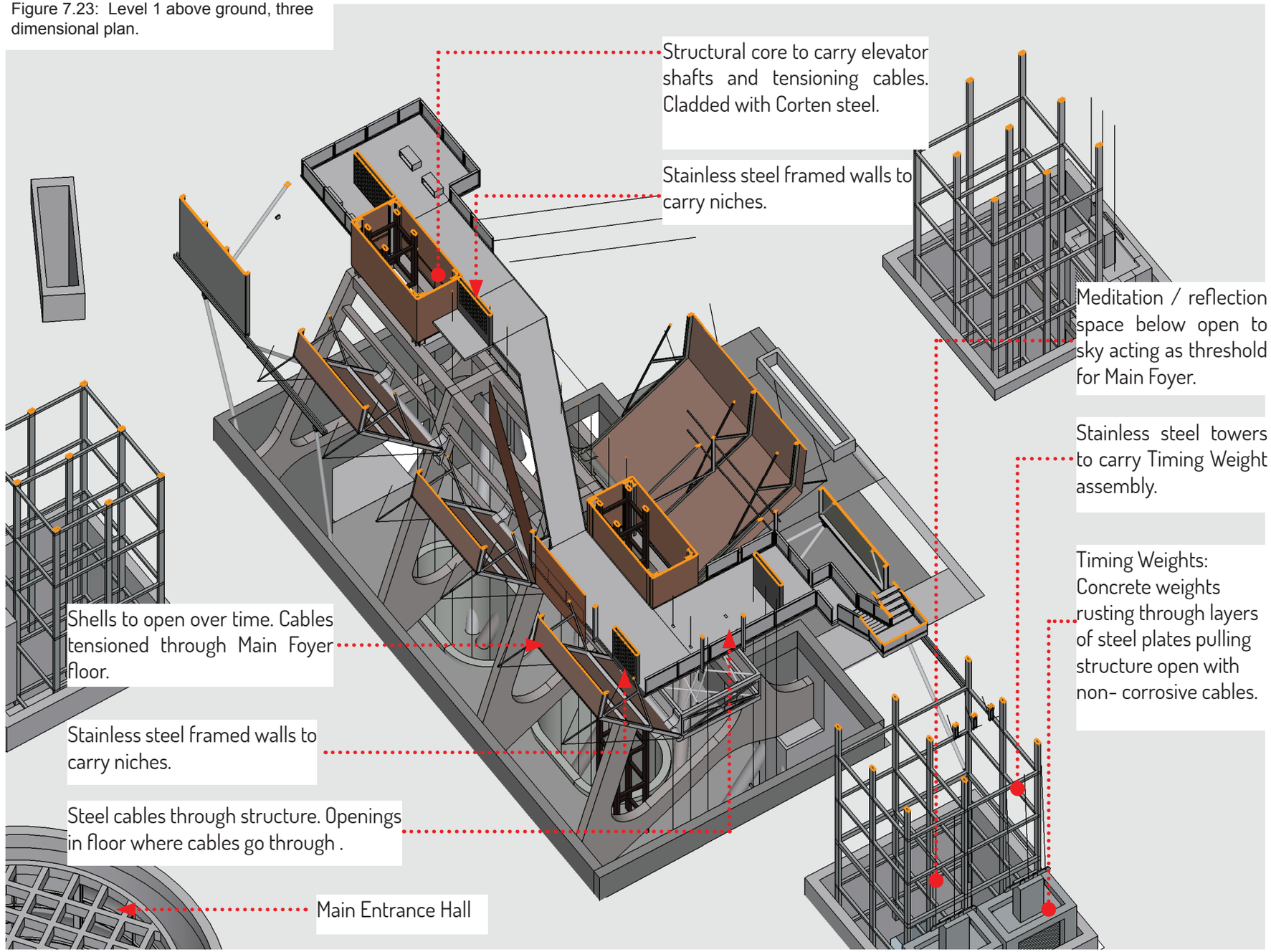


Figure 7.23: Level 1 above ground, three dimensional plan.



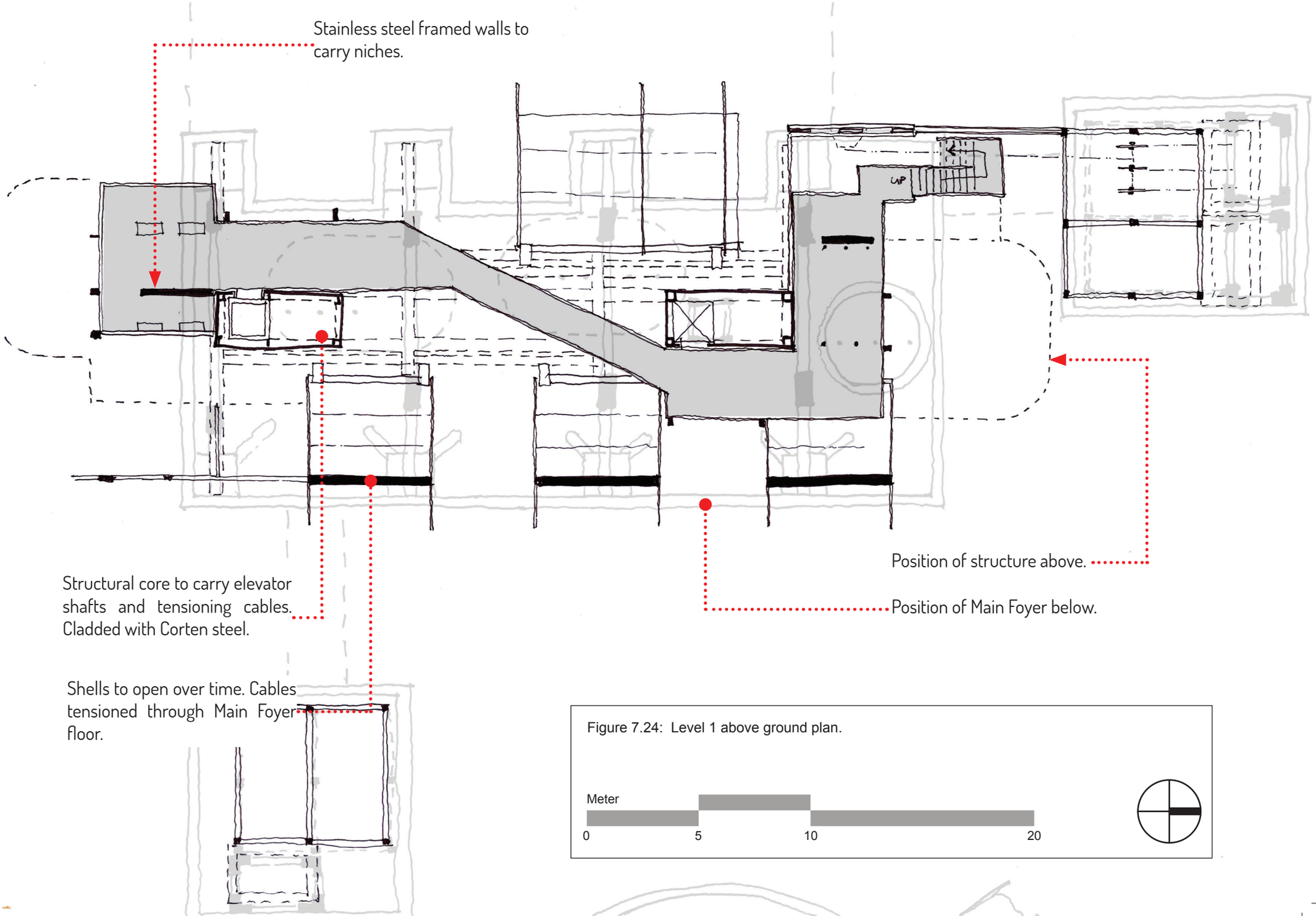
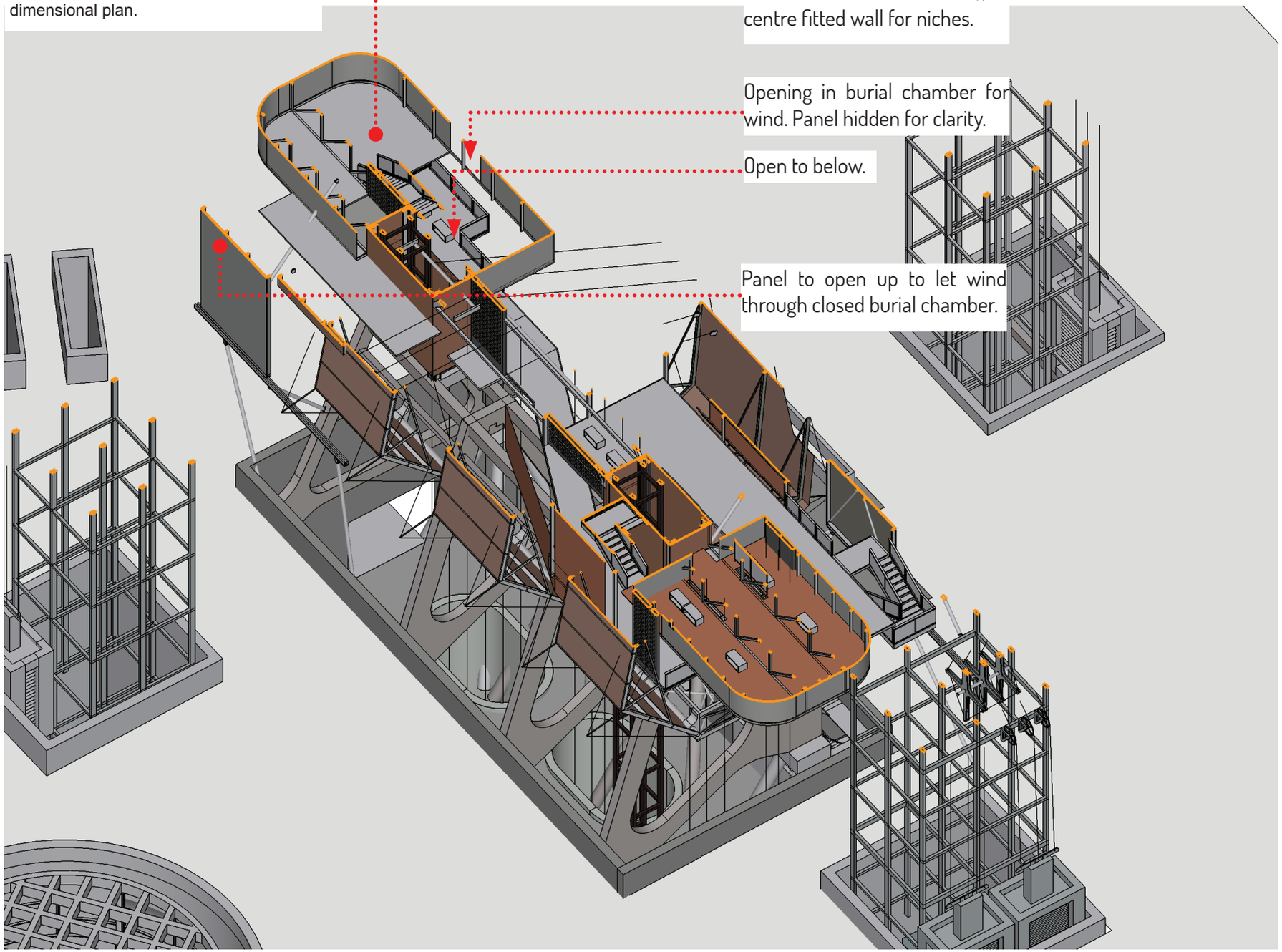


Figure 7.24: Level 1 above ground plan.

Figure 7.25: Level 2 above ground three dimensional plan.



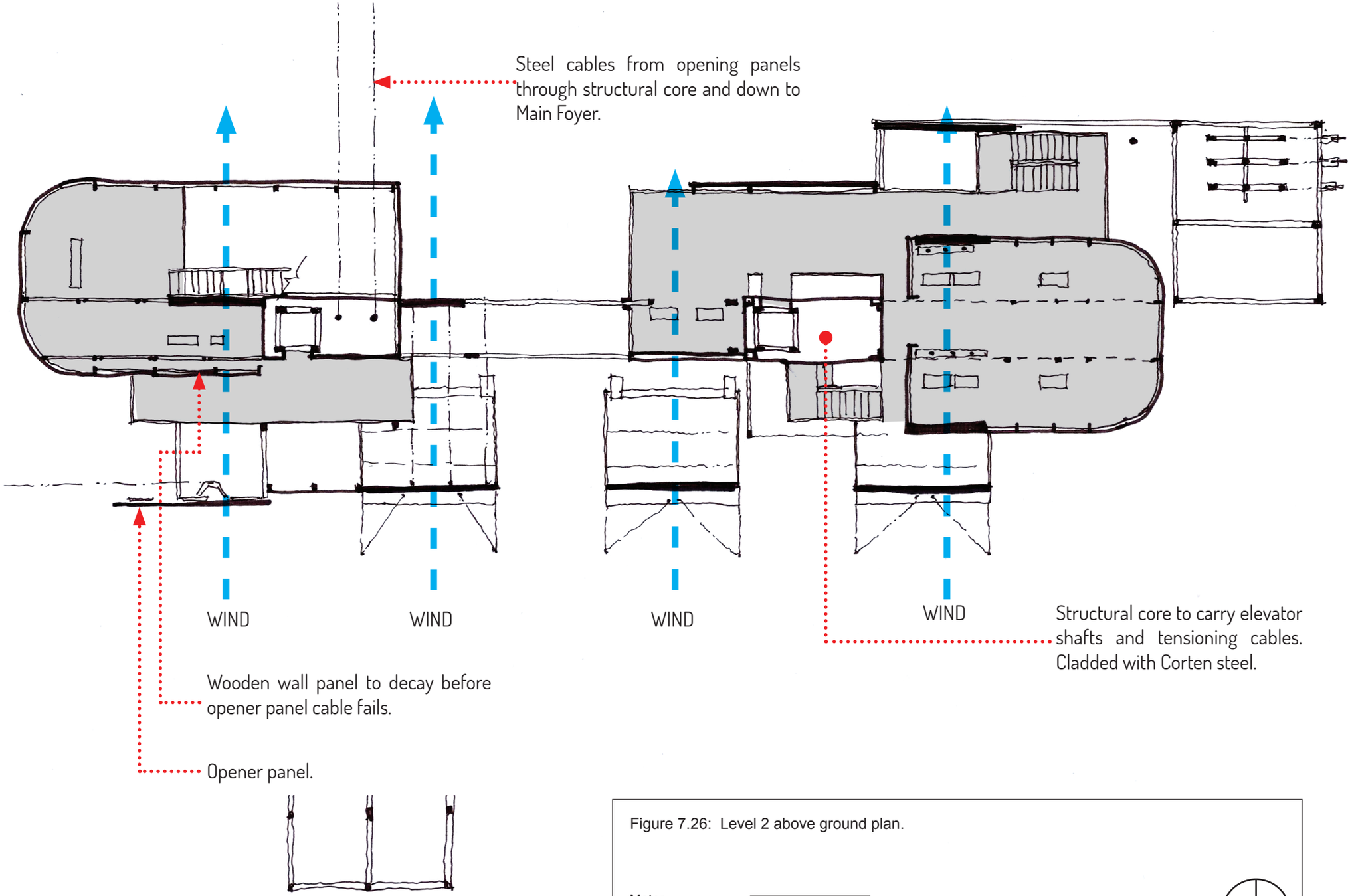
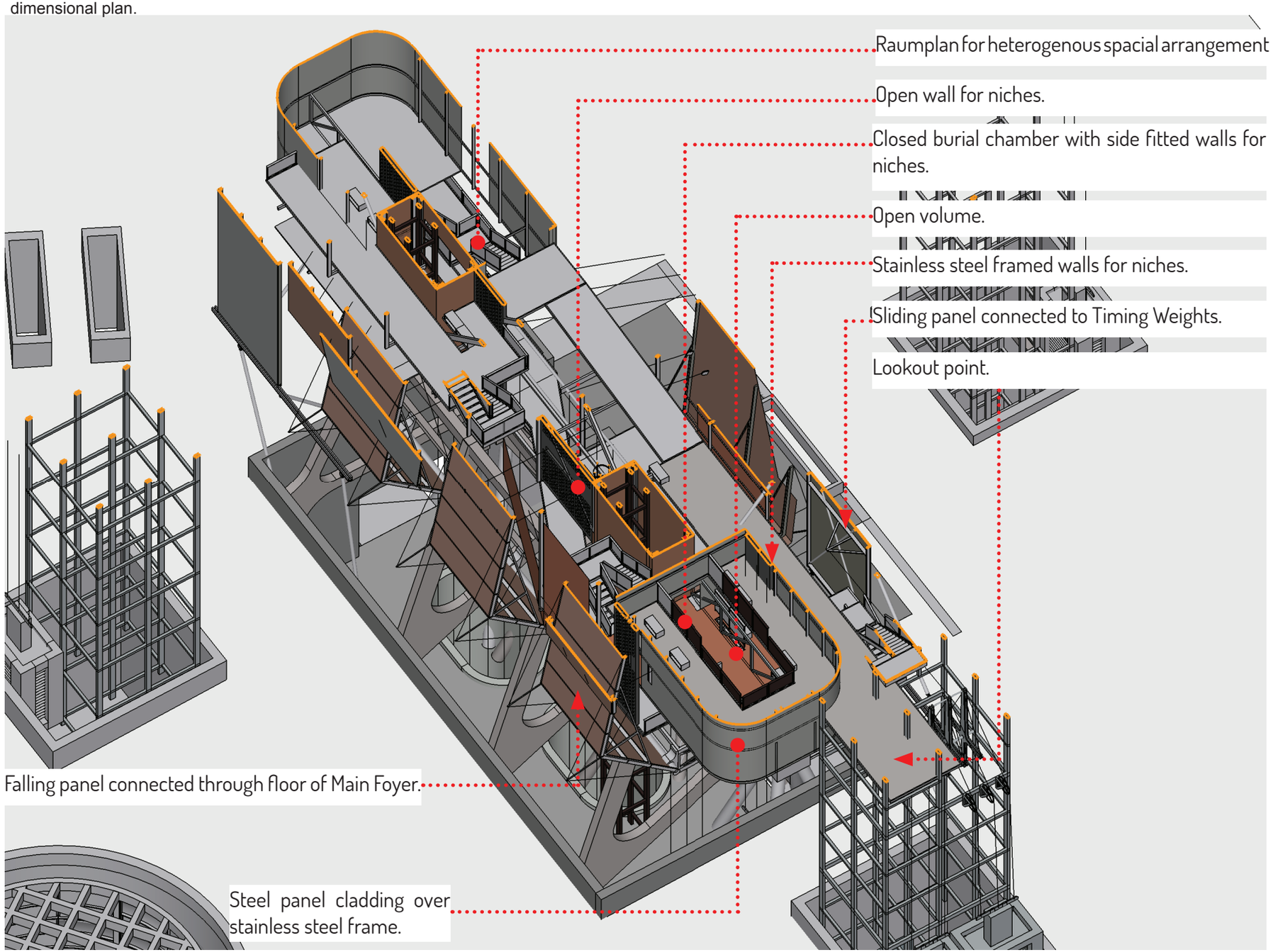


Figure 7.26: Level 2 above ground plan.

Meter

0 5 10 20

Figure 7.27: Level 3 above ground three dimensional plan.



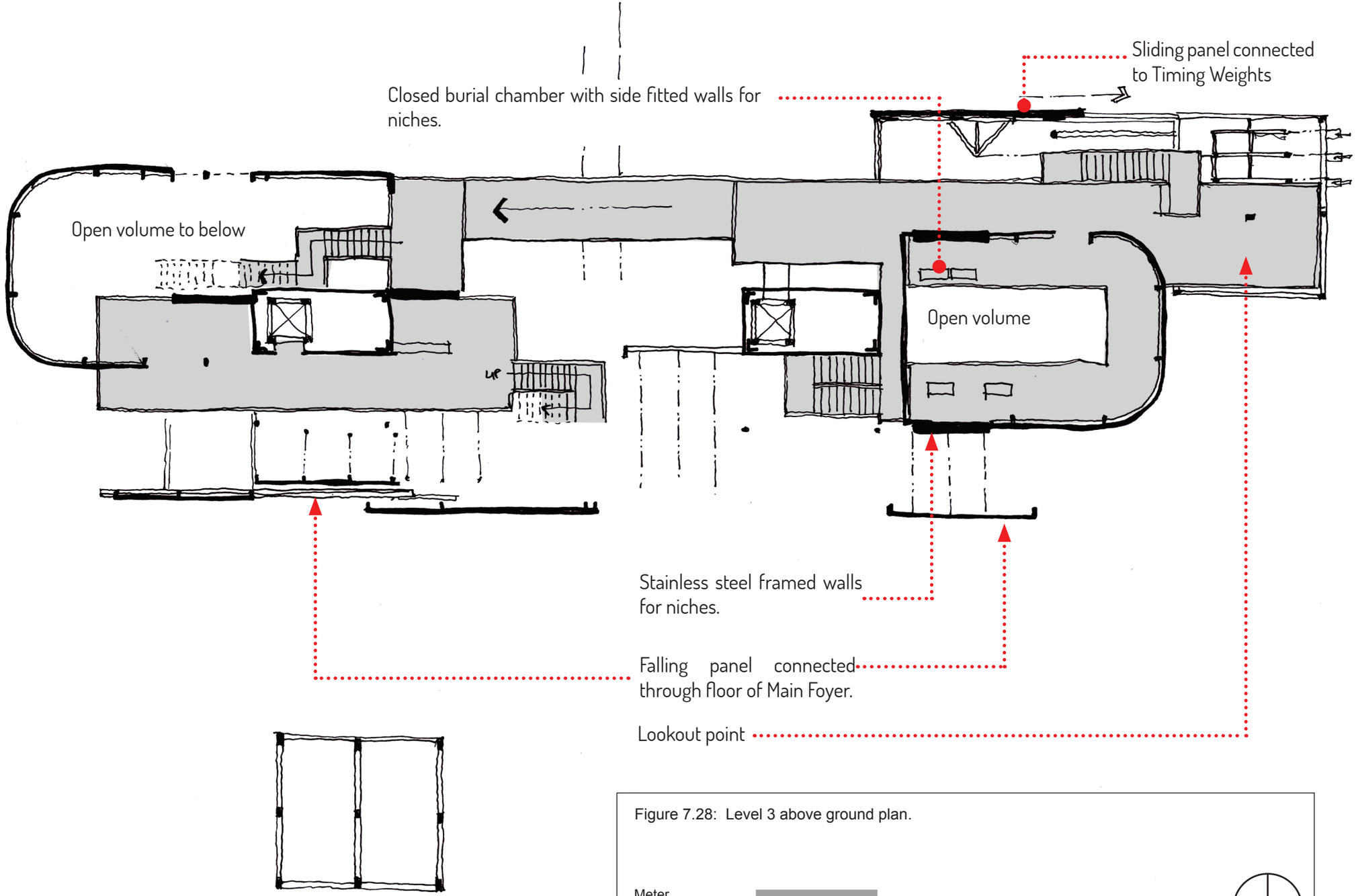
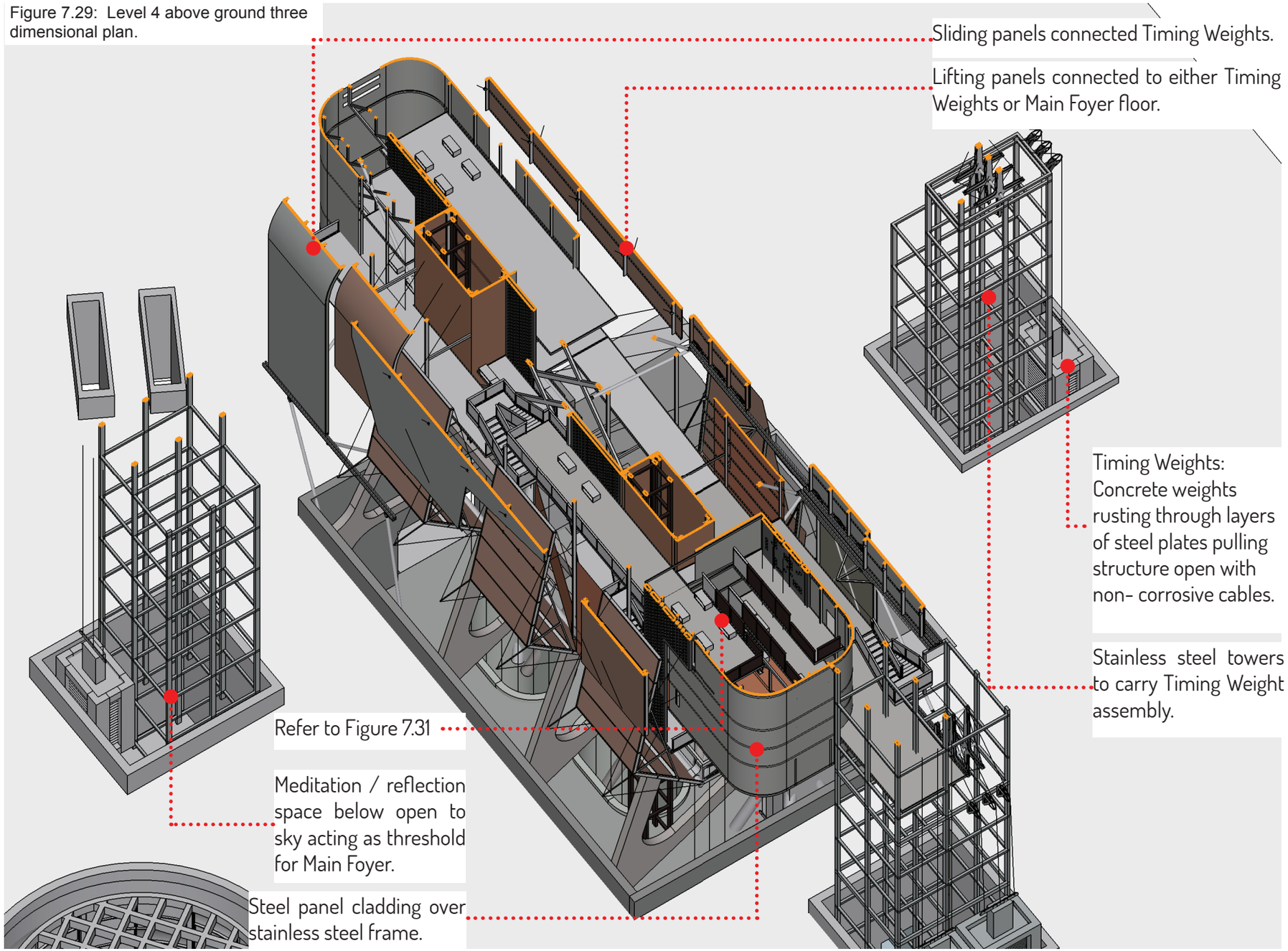
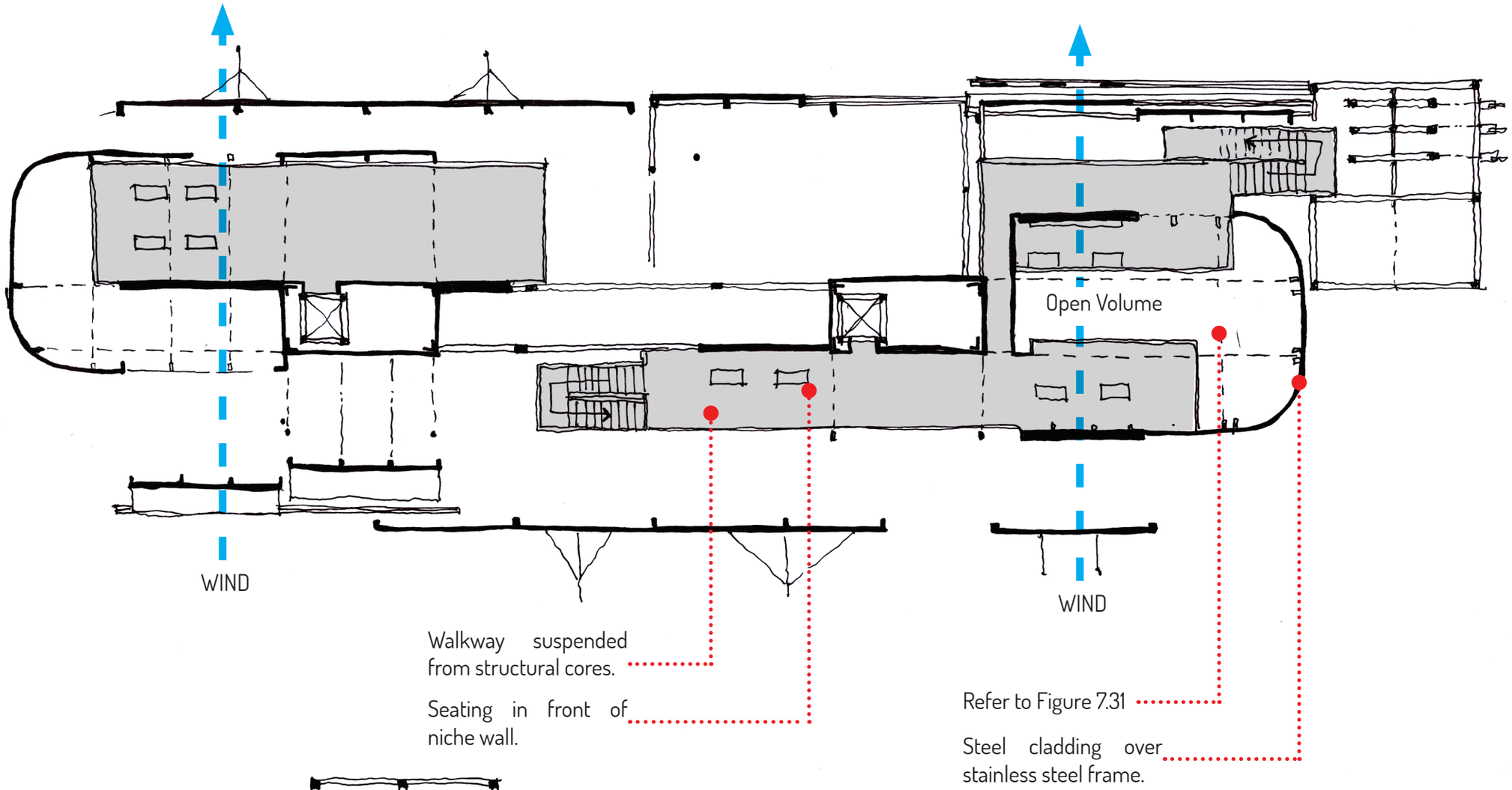


Figure 7.28: Level 3 above ground plan.

Figure 7.29: Level 4 above ground three dimensional plan.





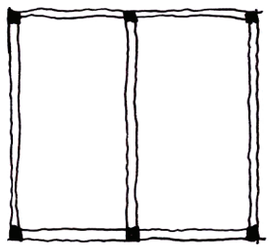
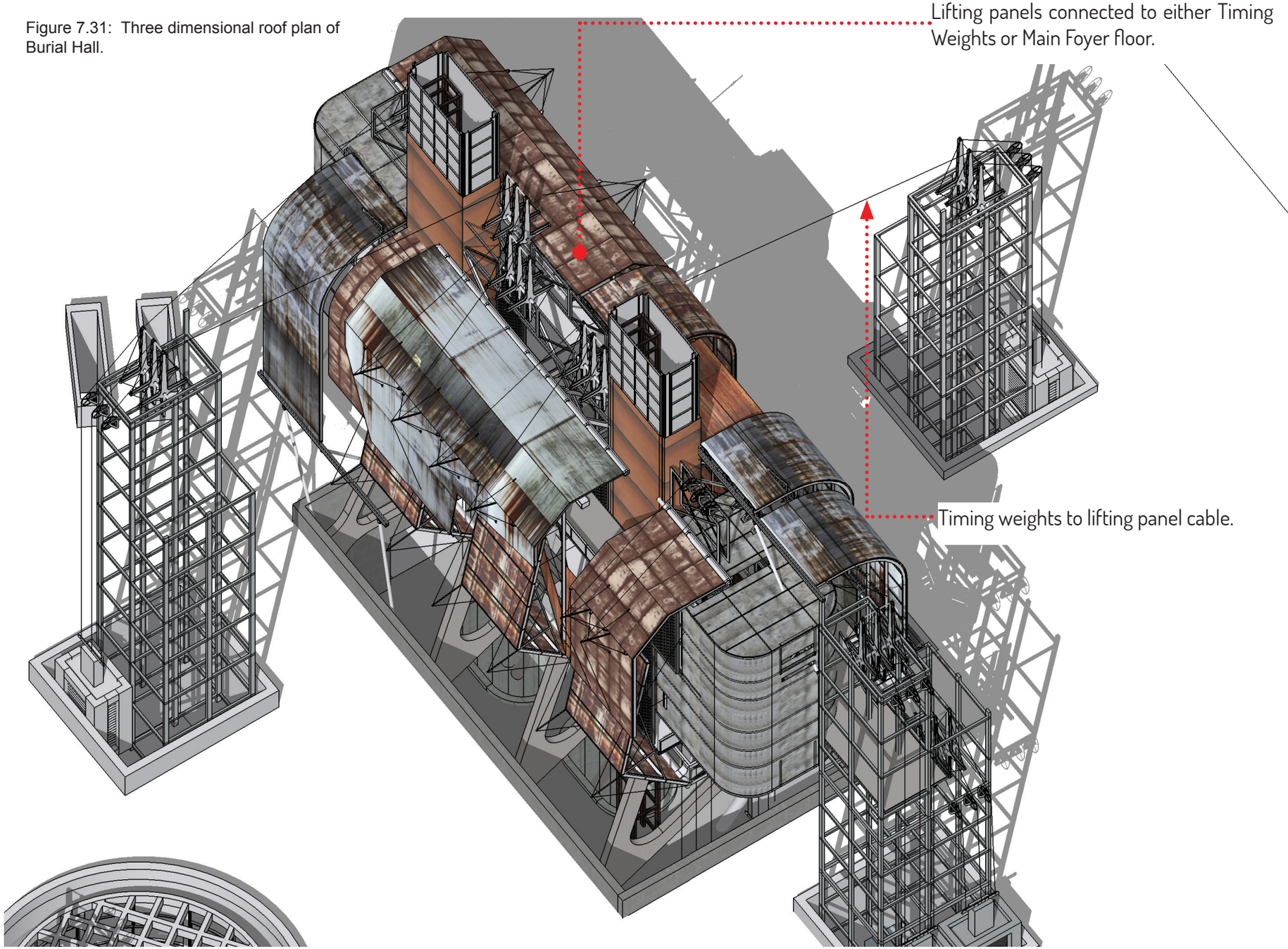


Figure 7.30: Level 4 above ground plan.

Meter

0 5 10 20

Figure 7.31: Three dimensional roof plan of Burial Hall.



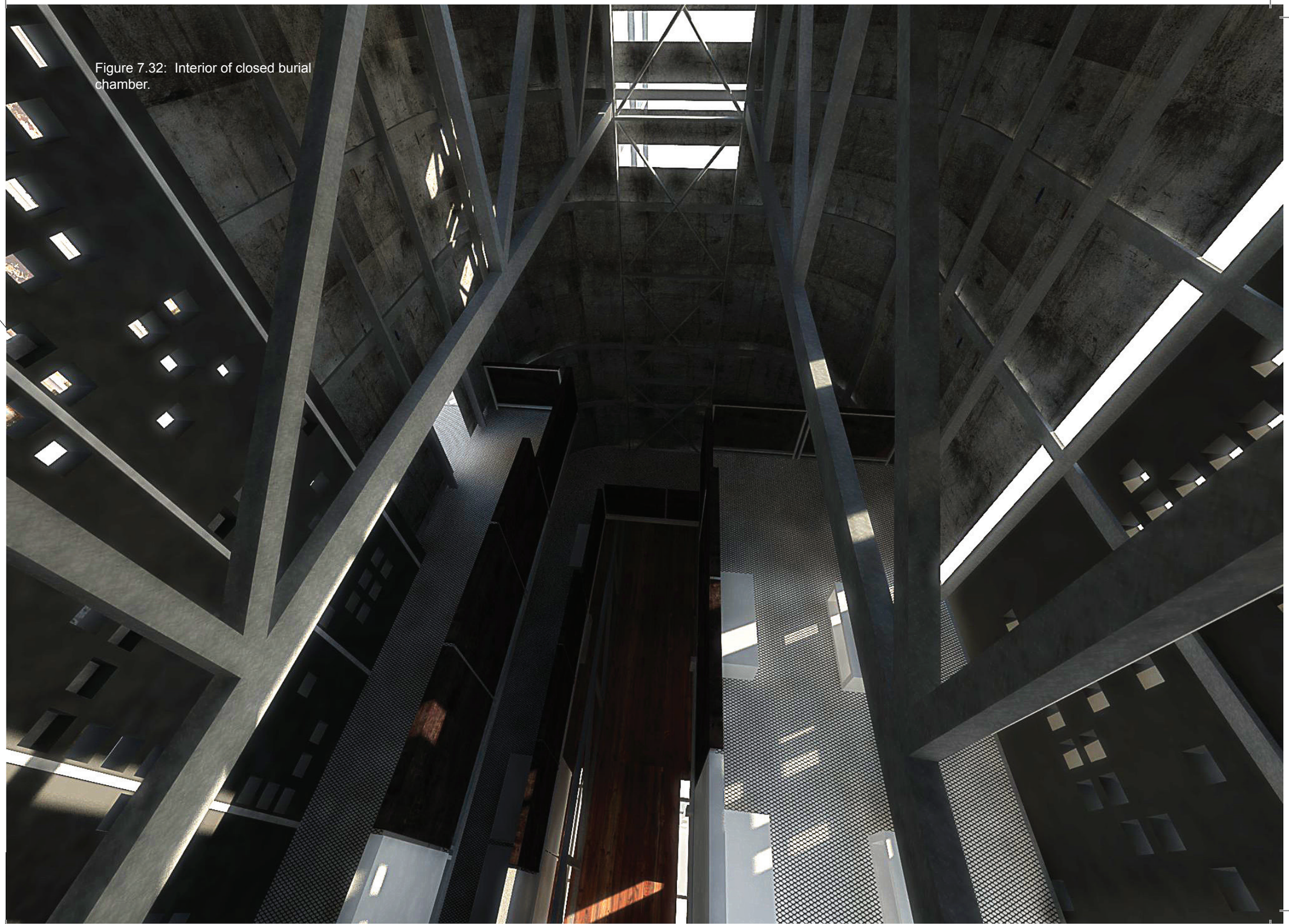


Figure 7.32: Interior of closed burial chamber.

7.7

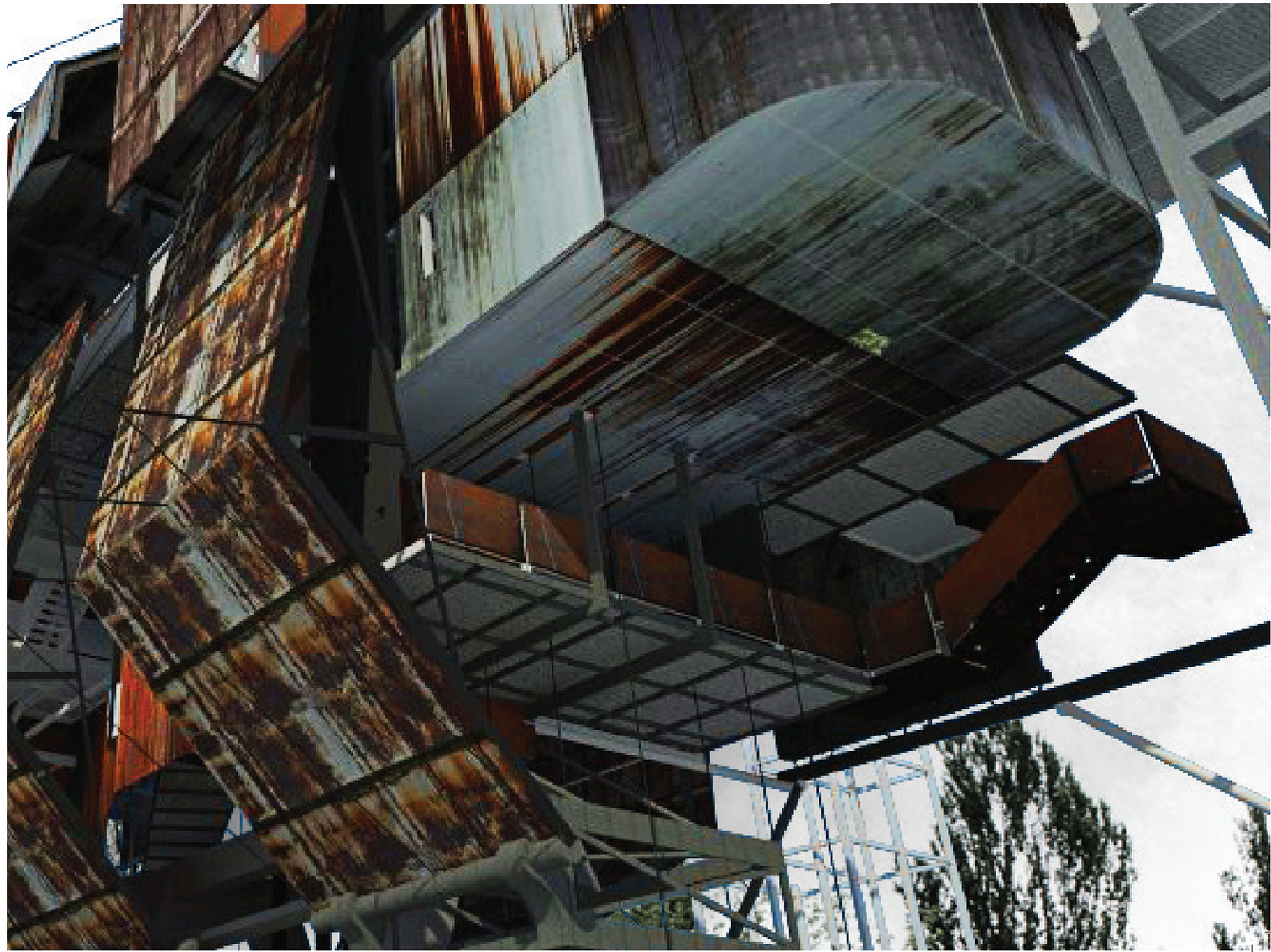
DESIGN DISCOURSE | BURIAL HALLS





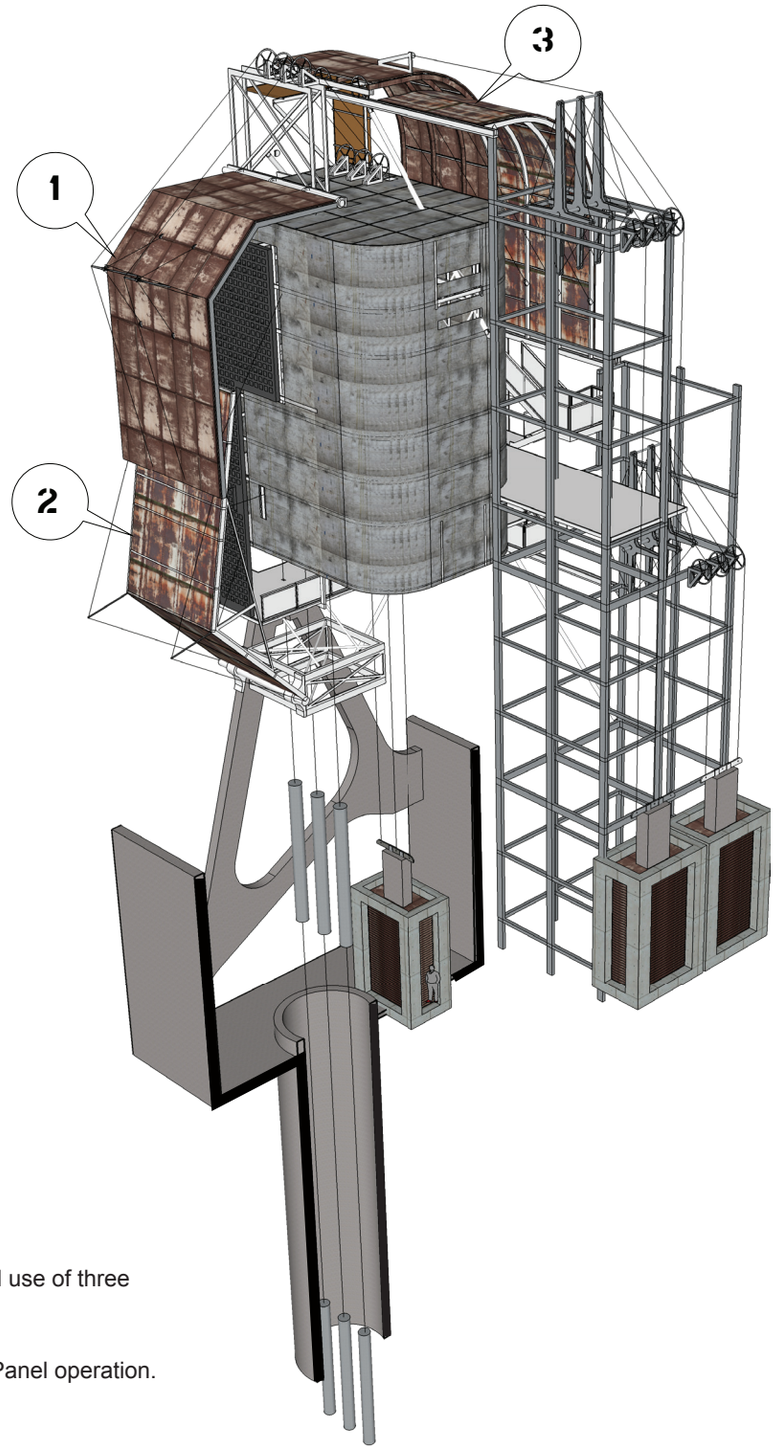
Figure 7.33: Perspective of Burial Hall on Lenin Square.

Figure 7.34: Tectonic relevance to Reactor 4 (refer to Figures 2.6, 2.7 & 6.1) .



7.8 MOTILE SYSTEMS

The motile systems that open the building to the landscape will be briefly and diagrammatically discussed for clarity purposes. Detailed scaled drawings about assembly can be found in Chapter 9, the Technical Report.



1: Lifting Panel

2: Falling Panel

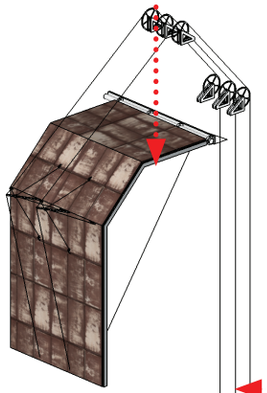
3: Sliding Panel

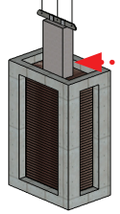
Figure 7.35: Diagram of typical use of three panels.

Opposite page:
Figure 7.36.1 - 7.36.3: Lifting Panel operation.

Stainless steel framework to take copper/Corten sheets.

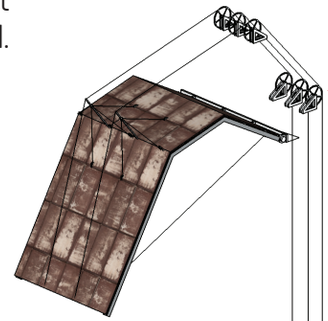
Carbon fibre cable. Does not corrode or stretch like steel.

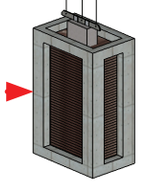




Concrete weight with steel footing on layers of steel sheets. Weight rusts through sheets over centuries, pulling open the panel.

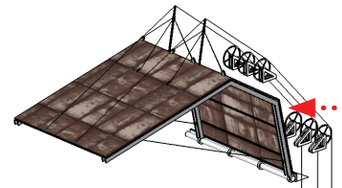
Stainless steel wheels on ceramic bearings to prevent steel on steel connection.





Precast concrete frame to take steel plates

Panel snap in place when final position is reached to remove tension off cables



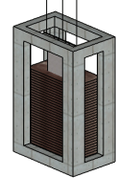
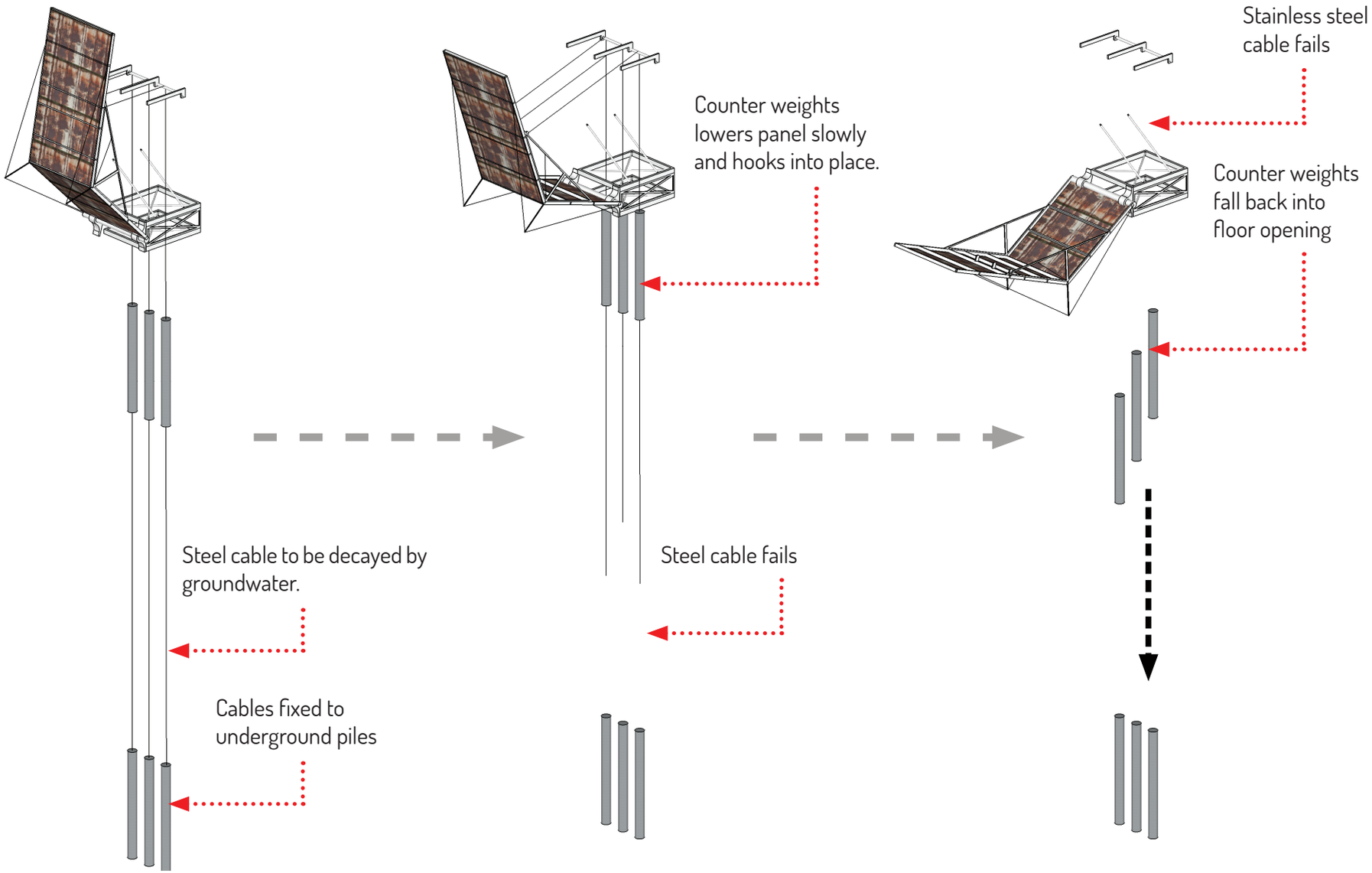


Figure 7.37.1 - 7.37.3: Falling Panel operation.



3

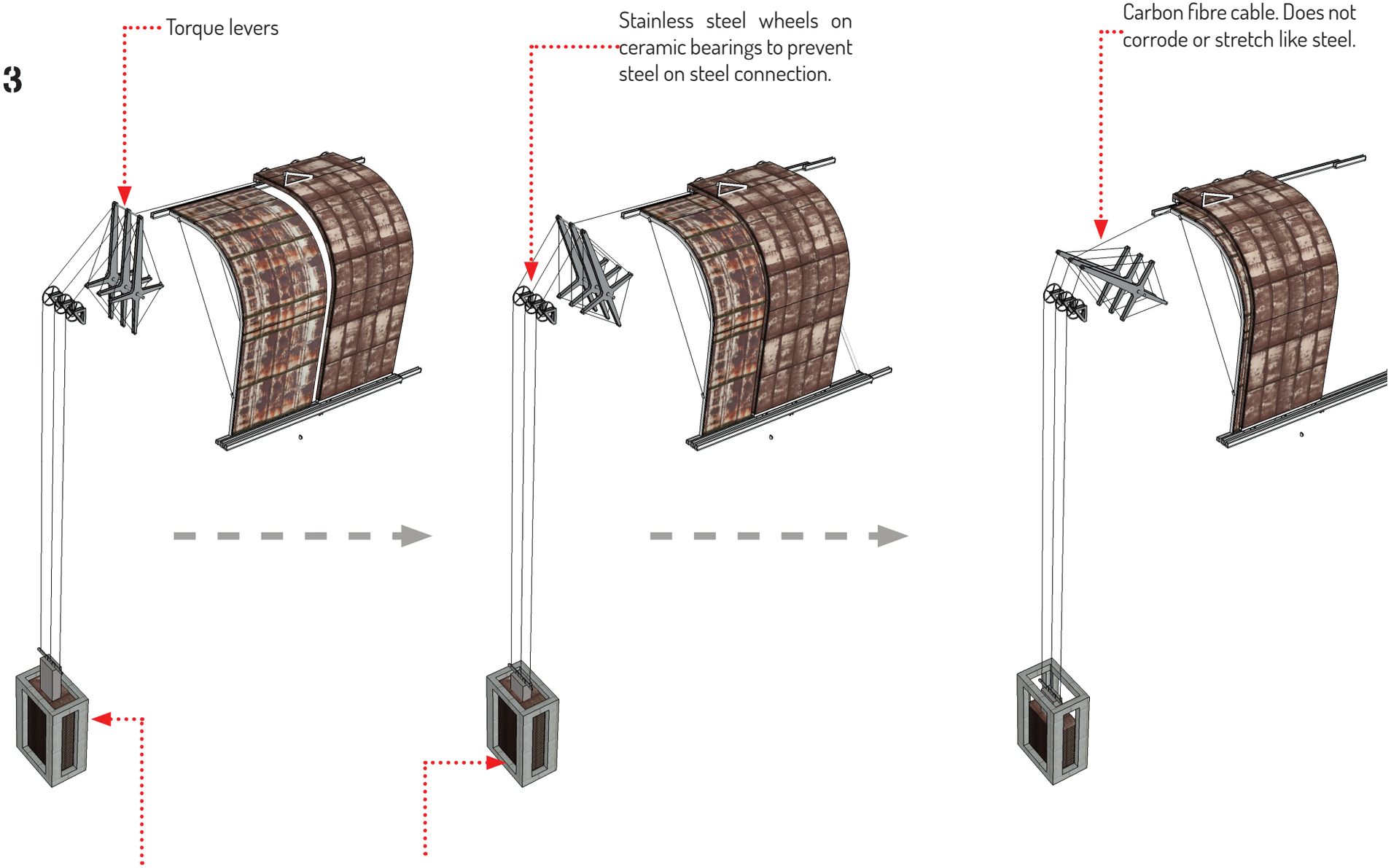


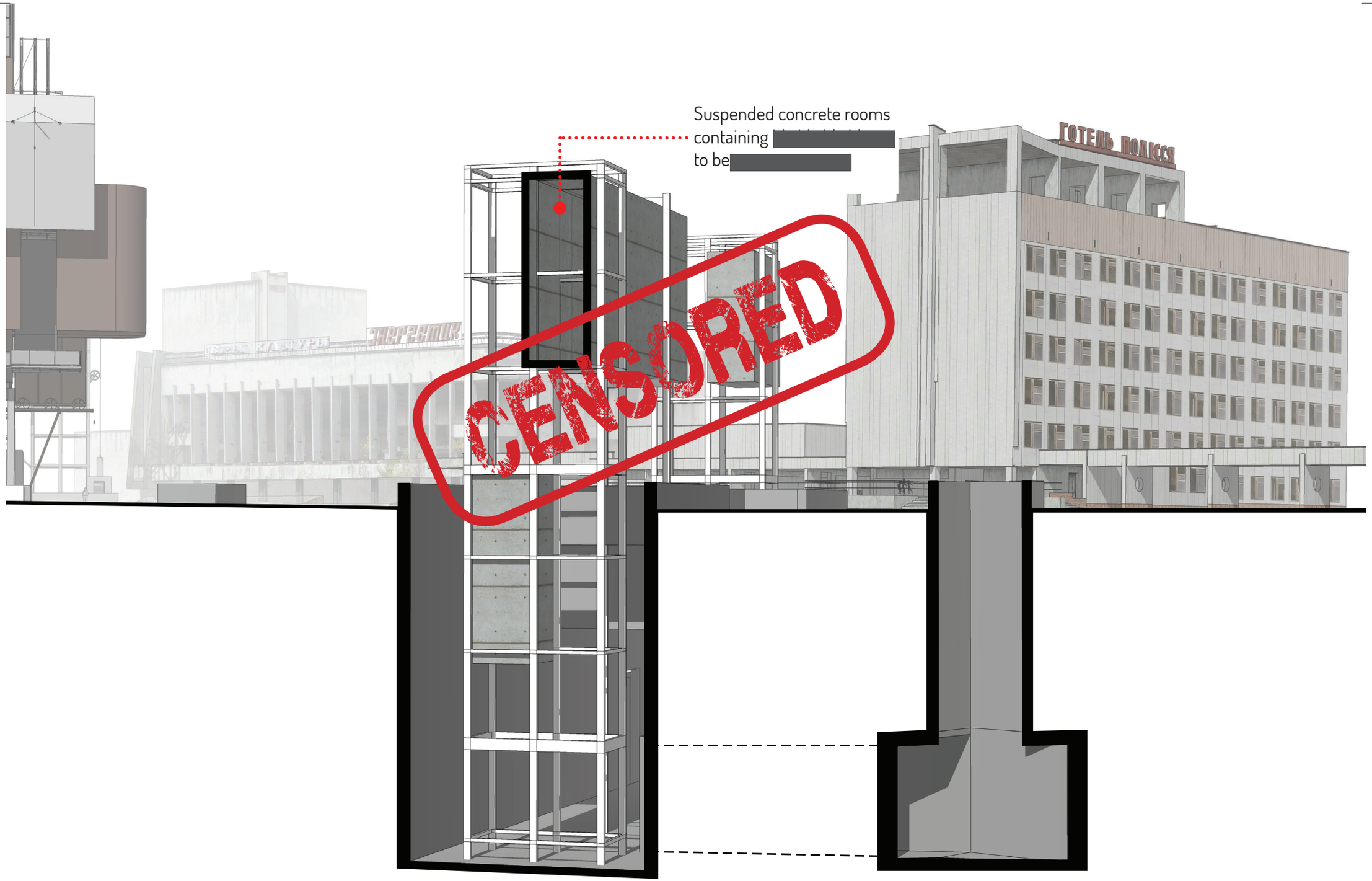
Figure 7.38.1 - 7.38.3: Lifting Panel operation.

7.9 CHAMBER OF SECRECY

The Chambers of Secrecy contain in them [redacted] These chambers are orientated towards the reactor to address the object in the landscape responsible for the horrific accident that caused the rapture of this community. These Chambers of Secrecy that contain [redacted] will forever be a remembrance of [redacted] and [redacted] by the former Soviet Union.



Figure 7.39: Chamber of Secrecy.


Suspended concrete rooms
containing [redacted]
to be [redacted]
CENSORED
ГОТЕЛЬ ПОЛІССЯ
ЭНЕРГЕТИК

7.10 MAGICAL PORTAL

The Magical Portals are hidden from the user but can be found through exploration of the building or site. Magical portals, as previously stated can either be used as entrances or exits depending on if the user stumbles upon these portals on site or through the exits from the Burial Halls' direction.

Should a person choose to use the exits through either of the Main Foyers of the Burial Halls, he would travel along hallways rhythmically lit by light shafts along the way. These spaces can also be used as rest spaces while the floor of the hallway gently ascends towards the ground line.

As the user breaks through the ground line he will find himself in a completely different area of the site. This area will be dense and the Burial Halls might just be visible over the tree tops from certain locations. The user is thus transported to a magical place where he has a good chance to meet Baba Yaga. This space will be secluded, private, dense and dark. Polissya made secret places throughout Pripyat, but this one is special. This is a place where humans can interact or merely spectate as Polissya dances with the contagonist *force*.

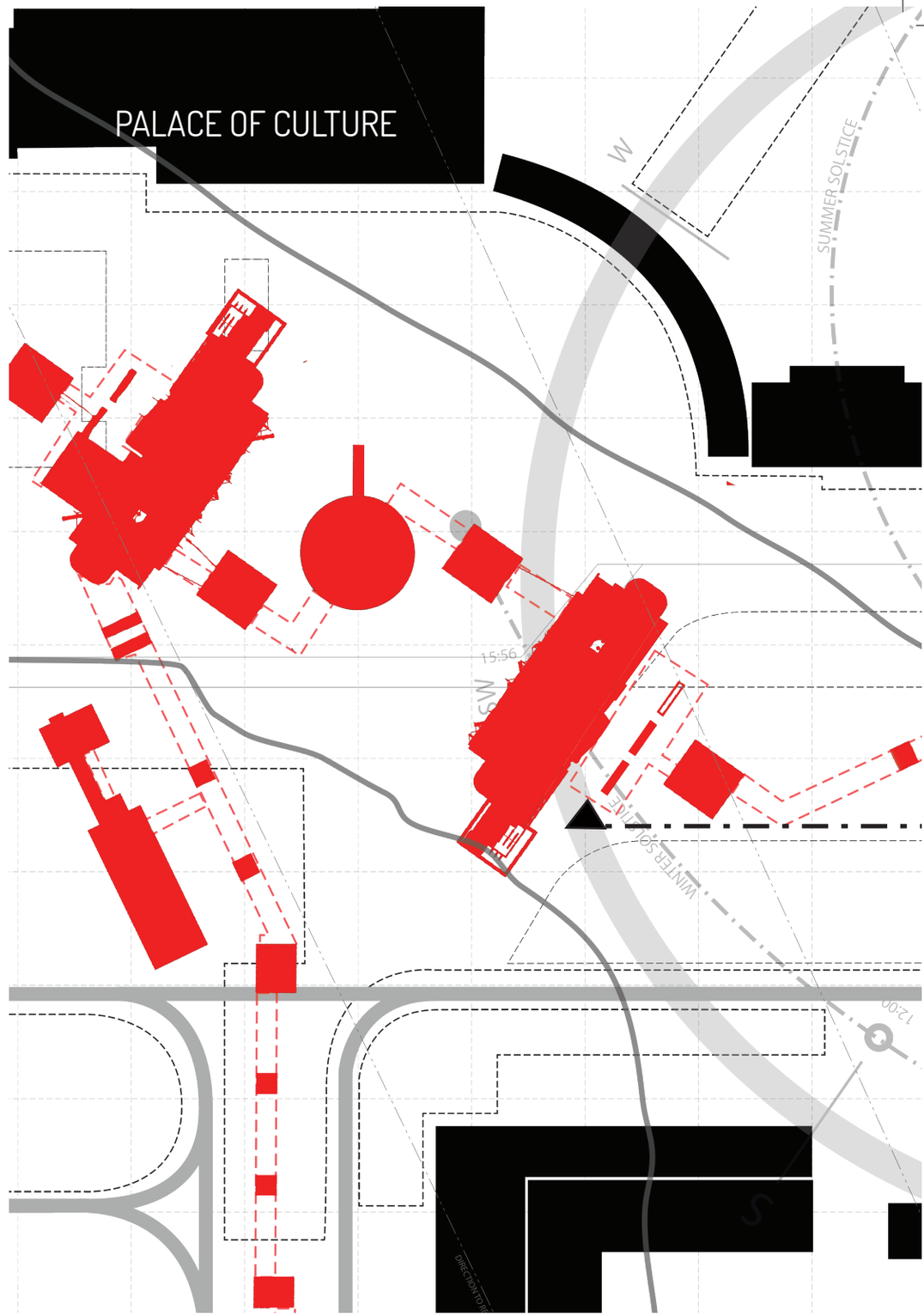
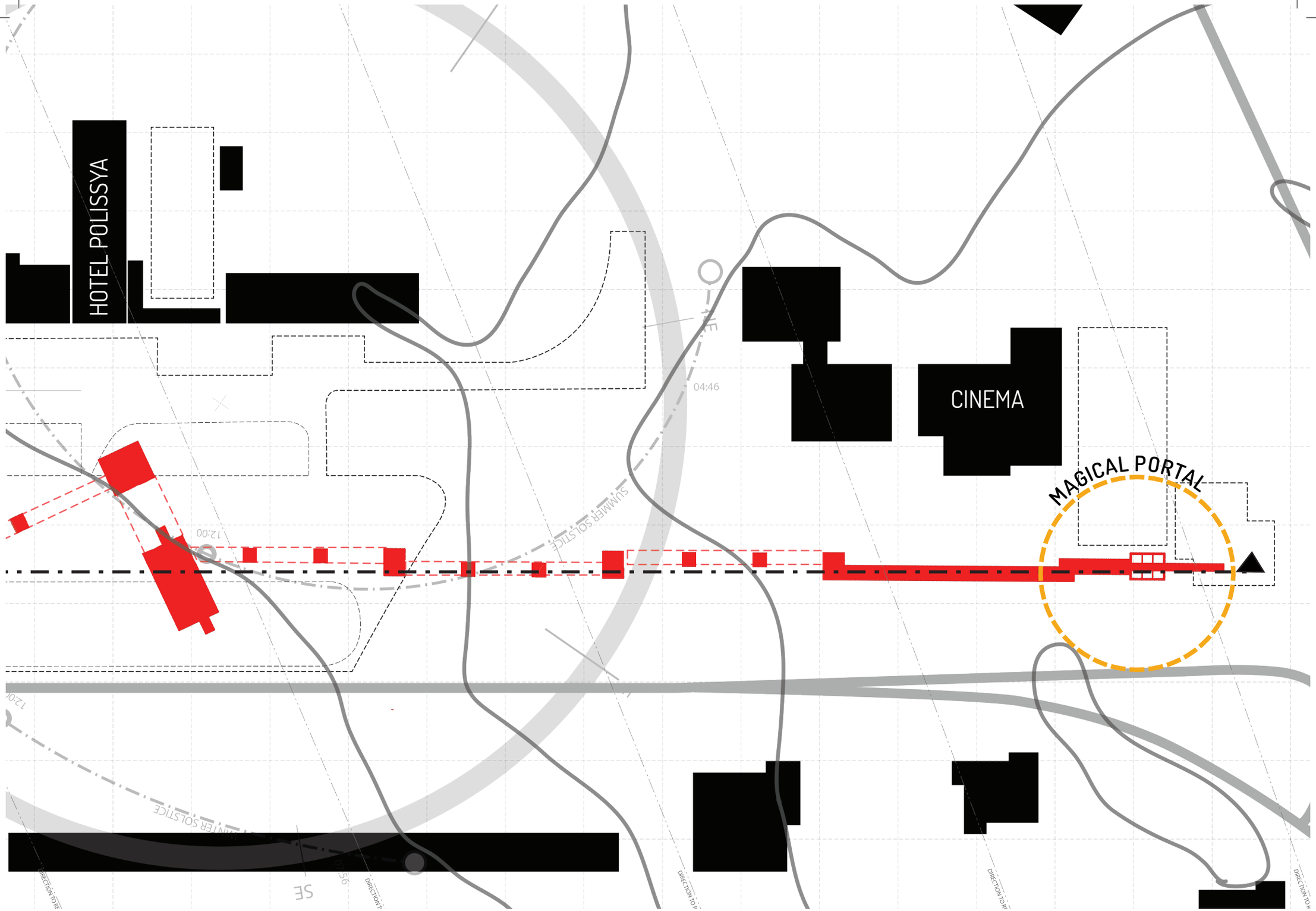


Figure 7.40: Enlarged site plan indicating Magical Portal and section line of sections on following page.


HOTEL POLISSYA
CINEMA
MAGICAL PORTAL
12:00
04:46
SUMMER SOLSTICE

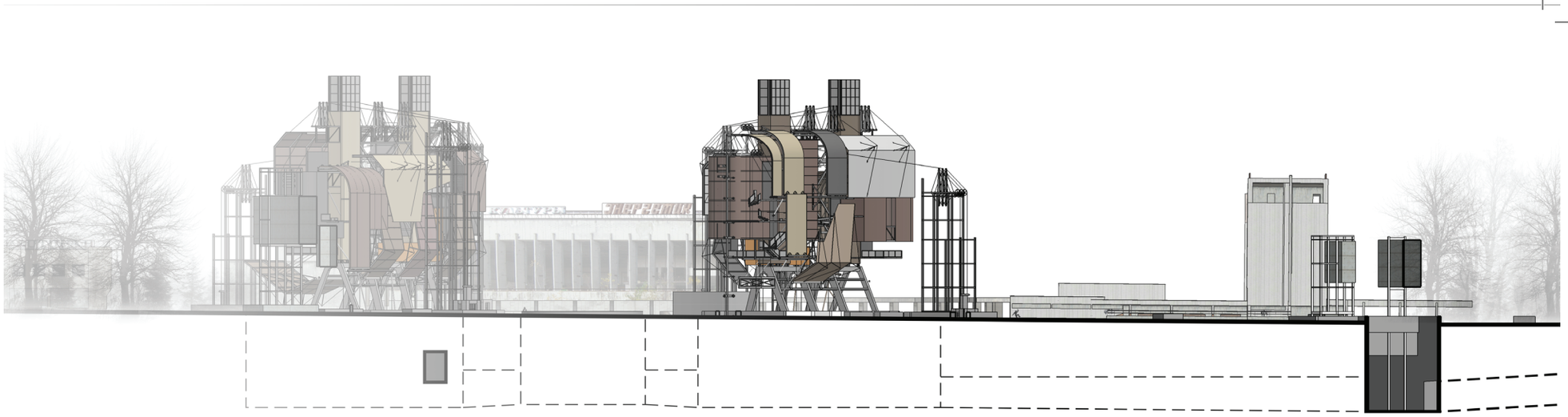


Figure 7.41: 1:2000 Section through site.





Figure 7.42: Magical Portal hidden near Cinema.

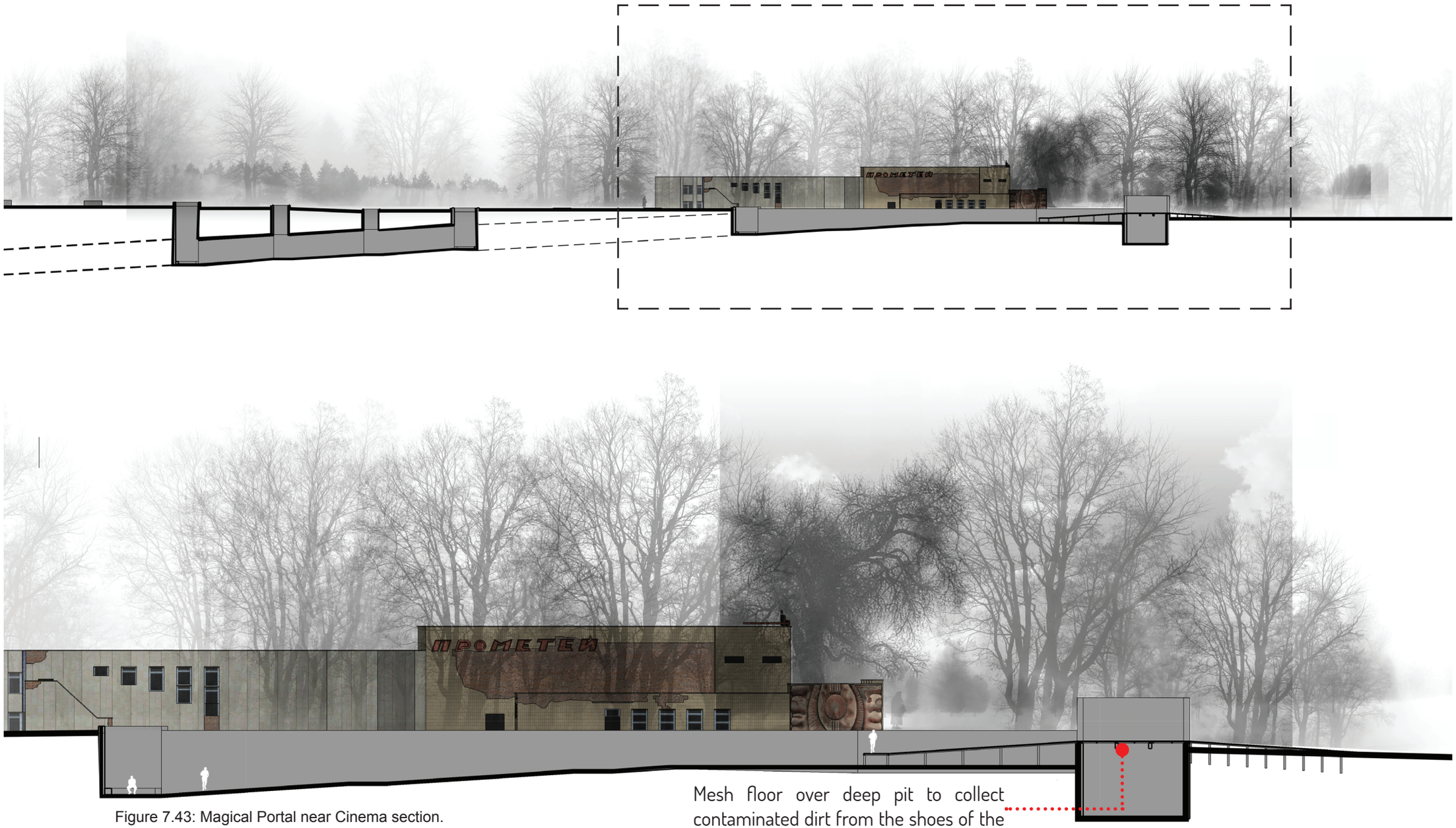


Figure 7.43: Magical Portal near Cinema section.

8

REFLECTION | відображення





"The zone pulls you in. You miss it, I tell you. Once you've been there, you'll miss it."

– Local hunters (Alexievich, 2006: 93)

8.1

The word ‘Conclusion’ was not used for this chapter as the author does not want to present this as a definite question-answer thesis, but rather a catalyst for discourse on landscapes that seem dead to the outside world. This landscape now consist of a more complex system of layers and meaning tied by emotions from grief to pure enrapturement.

Reflecting on this thesis the realization surfaced that it is very easy for anyone to be bias against the radioactivity. The Exclusion Zone is not a desert, and from visitations and photographs can be derived that it seems as if the landscape has in a magical way come to terms with what man called the ‘invisible enemy’. The fact that this area in the Ukraine is off limits to man evokes ideas and tales of a paranormal nature, thus elevating the magical perception of the landscape. Its been found that the magical spirit of Polissya is thus *more* perceivable and *more* present in this landscape where man can dwell only temporally. Man’s rapture out of this landscape thus plunged it into a deeper realm of magical realism.

The architectural proposal of this thesis should thus be seen not as an answer, but rather as a speculative foundation for addressing this new mutated level of perception of a landscape.

Thus, the question should be asked. Is there any ‘answer’ for Chernobyl, or is this landscape in a *dance* with a contagonist *force* that merely presents man with a temporal voyeuristic view? Chernobyl steals your heart and anyone that has roamed the empty spaces (whether a previous inhabitant, tourist or a Masters student in architecture) all have one thing in common, they all desperately want to go back to that magical place where they can never *exist*.



Figure 8.1: Piano in kindergarten.



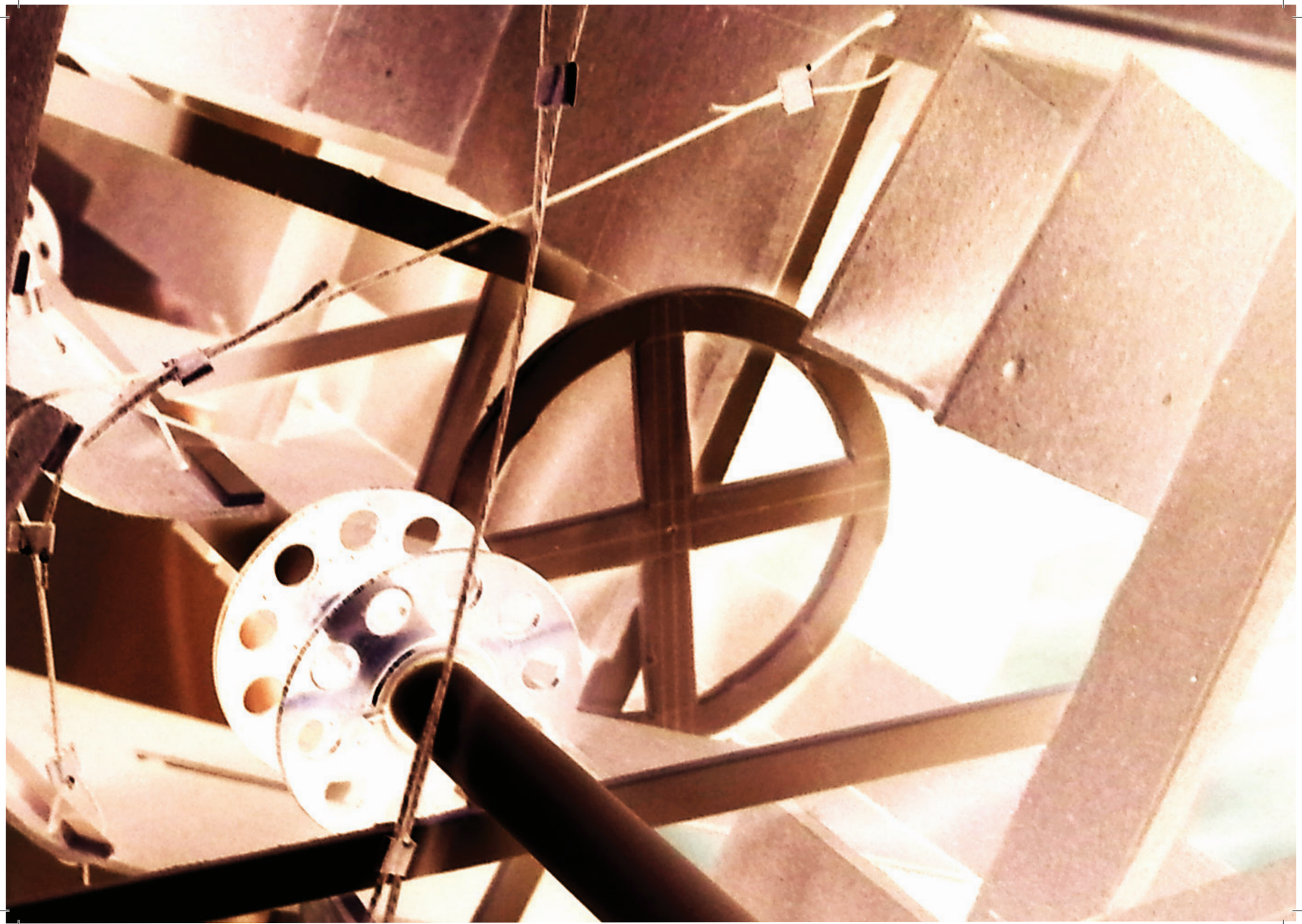
9

TECHNICAL REPORT | технічний звіт

“They gave us a new house. Made of stone. But, you know, we didn’t hammer in a single nail in seven years. It wasn’t ours. It was foreign. My husband cried and cried.”

– Evacuee (Alexievich, 2006: 71)





HELICOPTER CONSTRUCTION METHOD

Helicopters played an important role in the period following the disaster. Helicopters were used for a broad range of functions, including but not limited to, fire containment, radiation reconnaissance and evacuation of sick or wounded people (Masharovsky, 1998:1). The fire was suffocated by the helicopters through fire retarders like sand and boron over a period of six days. In essence the fire fighting by the helicopters prevented the reactor fire from contaminating larger parts of Ukraine and Europe (Medvedev, 2011: 55-56).

From this standpoint it can be derived that helicopters do have meaning attached to them in this specific landscape regarding this disaster. Helicopters will thus be used for construing meaning in the construction process. Thus addressing the polemic of radioactivity on the landscape, as well as meaning in the landscape, it would make sense to use helicopters where necessary in the construction phase of this project.





Figure 9.1: Helicopter sprays decontamination fluid (UPI, 1986: online).

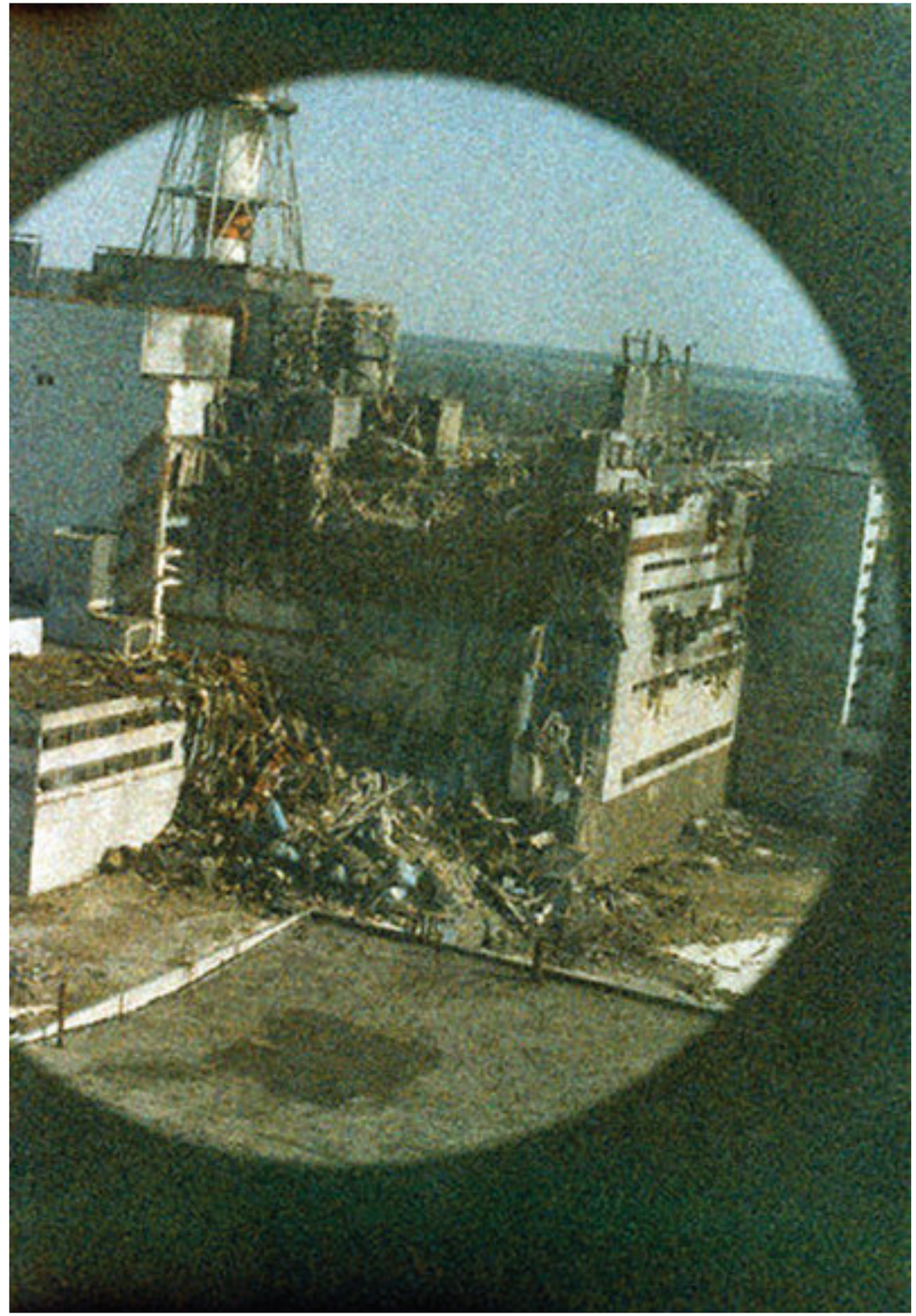


Figure 9.2: First photo of the damaged reactor was taken from a helicopter (Kostin, 1986: online).

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

TECHNICAL REPORT

REFERENCES | посилання



“We had a motherland, now it’s gone.”

– Lena M (Alexievich, 2006: 63)



Alexievich, S. 2006. *Voices from Chernobyl: The oral history of a nuclear disaster*. New York: Picador.

Anon. 2013a. *Panoramic view over Pripyat.* [online]. Available from: <http://i.imgur.com/RMym2.jpg> [Accessed 10 April 2013].

Anon. 2013b. *Pripyat city history*. [online]. Available from: <http://chornobyl.in.ua/en/the-pripyat-city-history.html> [Accessed 5 February 2013].

Brain, M. & Lamb, R. 2000. *How nuclear power works*. [online]. Available from:< http://science.howstuffworks.com/nuclear-power1.htm> [Accessed: 18 August 2013].

Brown, H.T. 2005. *507 Mechanical movements*. New York: Dover Publications Inc.

Cambridge Advanced Learners dictionary. 1998. 3rd edition. Cambridge: Cambridge University Press.

Chernobyl Foundation. 2012. *Chernobyl evacuation*. [online]. Available from: <http://www.chernobylfoundation.org/chernobyl/> [Accessed: 7 March 2013].

Ching, F.D.K. 2008. 4th edition. *Building Construction Illustrated*. New Jersey: Wiley & Sons Inc.

Church, R. 2013. *Dead Space*. [online]. Available from: < http://ryanchurch.com/dead-space/> [Accessed 16 September 2013].

Consey, K. 1996. Negotiating rapture, an introduction. In: Francis, R. (ed.). *Negotiating rapture*. Chicago: Museum of Contemporary Art, pp. 2-7.

Daycard-Heid, S. 2006. *A second life for the inhabitants of Chernobyl*. [online]. Available from: < http://www.cafebabel.co.uk/article/16600/a-second-life-for-the-inhabitants-of-chernobyl.html> [Accessed 7 March 2013].

Du Toit, P. 2012. (Nuclear Medicine Specialist). Personal communication about the effects of radioactivity on humans and landscapes. Bloemfontein, 11 December 2012.

Eisenman, P. 1994. The city of artificial excavation. In: Bedard, J. (ed.). *Cities of artificial excavation*. [n.p.]: Rizzoli, pp. 72-103.

Factory Fifteen. 2011. *Gamma*. [online]. Available from: <http://www.factoryfifteen.com/7936/434063/home/gamma> [Accessed 21 February 2013].

Google Maps. 2013a. *Chernobyl Nuclear Power Plant.* [online]. Available from:<https://maps.google.com/?ll=51.3899,30.09814&spn=0.023004,0.051026&t=h&z=15> [Accessed 17 August 2013].

Google Maps. 2013b. *Russian Woodpecker.* [online] Available from:<https://maps.google.com/?ll=51.305359,30.066791&spn=0.011523,0.025513&t=h&z=16> [Accessed 17 August 2013].

Google Maps. 2013c. *FNB Stadium*. [online]. Available from:< https://maps.google.com/maps?q=FNB+Stadium,+Johannesburg+South,+Gauteng,+South+Africa&hl=en&sll=51.305359,30.066791&sspn=0.011027,0.033023&oq=FNB+&t=h&hq=FNB+Stadium,+Johannesburg+South,+Gauteng,+South+Africa&z=17> [Accessed 17 August 2013].

Google Maps. 2013d. *Voortrekker Monument*. [online]. Available from:< https://maps.google.com/?ll=-25.77639,28.17627&spn=0.016579,0.025513&t=h&z=16> [Accessed 17 August 2013].
Greyvensteyn, P. 2013. (Professional Architect). Personal communication regarding structural detailing. Klerksdorp, 6 September.

Jackowski, N. & De Ostos, R. 2013. *The hanging cemetery of Baghdad*. [online]. Available from<: http://naja-deostos.com/projects/the-hanging-cemetery-of-baghdad/> [Accessed 21 February 2013].

Jarz, H. 2011. *2010 Zombie Apocalypse Safe House Competition*. [online]. Available from:< http://www.archdaily.com/100507/2010-zombie-apocalypse-safe-house-competition/> [Accessed 21 February 2013].

Kiev Pechersk Lavra official site. 2013. *Map of the far caves*. [online]. Available from: < http://lavra.ua/index.php?option=com_content&task=view&id=1574&Itemid=182 > [Accessed 21 February 2013].

Kostin, I. 1986. *Chernobyl nuclear disaster in pictures*. [online]. Available from: <http://www.guardian.co.uk/environment/gallery/2011/apr/26/chernobyl-nuclear-disaster-in-pictures> [Accessed 21 March 2013].

Leontiev, Y. 2011. *Pripyat: Short introduction*. [online]. Available from: < http://pripyat.com/en/pripyat-and-chernobyl/pripyat-short-introduction.html> [Accessed 7 March 2013].

Lyabakh, M. (ed.). 1996. *And the name of the star is Chornobyl*. Chernobyl: Chornobyl Interinform.

Lytovka, O. 2013. (Ukrainian Masters Student). Personal communication during Monstrous Geographies conference. Prague, 15 May.

Masharovsky, M. 1998. Operation of helicopters during the Chernobyl accident. In: *Symposium on current aeromedical issues in rotary wing operations*, San Diego 19-21 October 1998.

Medvedev, Z. 2011. *The legacy of Chernobyl*. Republication. Nottingham: Spokesman.

Meyer, H. 2013. (Structural Engineer). Personal communication regarding structural resolution of this thesis. Klerksdorp, 6 September.

Pashchenko, H. 2012. (Employee of Chernobyl Inter-Inform and official guide in Exclusion Zone). Personal communication during visit to Exclusion Zone. Pripyat, 2 October.

Pashchenko, H. 2013. (Employee of Chernobyl Inter-Inform and official guide in Exclusion Zone). Personal communication during second visit to Exclusion Zone. Pripyat, 13 May.

Rand Mcnally. 2013. *Ukraine Political Map*. [online]. Available from: < http://education.randmcnally.com/classroom/action/viewLargerMapImage.do?geoEntityType=Country&geoEntityName=Ukraine> [Accessed 5 February 2013].

Stalker, 1979. Film (Russian with English subtitles). Directed by Andrei Tarkovsky. Soviet Union: Mosfilm.

The battle of Chernobyl, 2006. Documentary. Directed by Thomas Johnson. Italy: Play Film.

The Cultural Studies Reader. 2011. *Heideggers concept of the fourfold in 'Building Dwelling Thinking'*. [online]. Available from: < http://culturalstudiesnow.blogspot.com/2011/05/heideggers-concept-of-fourfold-in.html> [Accessed 18 August 2013].

The Free Dictionary. 2013. *Definition of rapture*. [online]. Available from: < http://www.thefreedictionary.com/rapture> [Accessed 21 September 2013].

Tricon Films & Television. 2010. *Abandoned worlds: Chernobyl*. [online]. Available from: < http://abandonedworlds.com/?p=609> [Accessed 7 March 2013].

UA-Travelling. 2012. *The Caves of Kiev-Pechersk Lavra*. [online]. Available from: < http://ua-traveling.com/en/article/caves-kievo-pecherskaya-lavra> [Accessed 21 February 2013].

UNESCO. 2013. *Kiev: Saint-Sophia Cathedral and Related Monastic Buildings*. [online]. Available from: <http://whc.unesco.org/en/list/527/> [Accessed 21 February 2013].

UPI. 1986. *Chernobyl nuclear disaster.* [online]. Available from: < http://dalje.com/en/foto.php?id=19&rbr=21604&idrf=880751> [Accessed 12 March 2012].
Van der Streaten, B. 2003. *The uncanny and the architecture of deconstruction.* [online]. Available from: <http://www.imageandnarrative.be/inarchive/uncanny/bartvanderstraeten.htm> [Accessed 28 February 2013].

Von Geyso, C. 2013. (Structural Engineer). Personal Communication during desk crits at Department of Architecture. Bloemfontein, 25 July.

Woods. L. 2009. *Fluid Space*. [online]. Available from: <http://lebbeuswoods.wordpress.com/2009/06/28/fluid-space/> [Accessed 14 March 2013].

APPENDIX: MAPPING THE CHERNOBYL NARRATIVE

Paper presented at Monstrous Geographies Conference in Prague, Czech Republic in May 2013.

Abstract

This project aims to, for the first time; map the events of the Chernobyl Disaster cartographically. Thus it can be said that a cartographic timeline/narrative will be created to add to the current lack in the body of knowledge in this area.

Maps of the Chernobyl exclusion zone are freely available, but a significant lack of knowledge exists as to when and where certain layered events took place relative to the nuclear power station. Extensive reading is needed for anyone to grasp the events leading up to and following the disaster. The events of the disaster have been documented in the past, but never extensively retraced and represented cartographically.

Examples of these events would be the various locations of fire departments that assisted in the initial emergency call. The routes of these fire fighters can then be mapped in layered fashion, against the wind pattern during the disaster, in order to create a pattern of radiation fallout that these men were exposed to before even reaching the power plant. Another example would be the role of the Pripyat town centre in the evacuation of the 50 000 inhabitants, and how a strong modernist town layout aided in the exceptionally swift evacuation of all the inhabitants. These examples act as only the tip of the iceberg, and a range of layers can be interchanged in order to create various cartographic narratives.

The author of this project conducted site visits to the Chernobyl Nuclear Power Plant, as well as the nearby towns of Chernobyl and Pripyat. The author will draw upon these site visits, various publications and previous cartographic experience, to compile this body of knowledge.

Key Words: Chernobyl, Disaster, Mapping, Time, Space, Narrative, Nuclear, Radioactive

Monstrous Cartography:
Mapping the Chernobyl narrative: The Monstrous and Beyond.

Author: Wynand Viljoen
University of the Free State

A large scale event like the Chernobyl Nuclear disaster is often told as a narrative that appears to be a well thought out script, when indeed the events that form the narrative consists of an often forgotten network of micro events. This paper will aim to map these often forgotten events of micro narratives, and study how they relate to one another on a cartographic level.

Doreen Massey, in her book For Space, stated that space is in a constant state of becoming, or being made. Space is thus in a constant state of incompletion, or always unfinished. It is made and changed by the presence of a person in a space in a specific time, but also their absence from another space. As a person then leaves that space, the space continues to be made even within their absence, but it is their presence in that space on a specific time that changed the way that space is being made in the future (Anderson, 2005:228-230).

This is especially relevant to mapping events over a landscape (or space).The fact that a certain person or group of people occupied a space in a specific time changed the way this space is being made in the future. The author argues that occupying a specific space in a specific time, stamps the time-space narrative with your presence for the future. A golden thread in the time-space narrative manifests itself when we are able to map events to a specific space, although in different times, in relation to a specific event. It can thus be said that the golden thread of the time-space narrative is a map that illustrates how more than one person changed the way a space is made. Thus it is possible to say that these people met each other in space, but not necessarily in time, forming what is referred to in this paper as time-space knots.

The spaces in which these events take place vary in scale,thus for clarity the author has broken down the events into layers pertaining to the said specific events. The author will briefly discuss each event layer in the context of the broader catastrophe and conclude with a golden thread on time-space connectivity or time-space knots.

Background to Event

At 1:23 on the 26th of April 1986, a series of explosions ripped through the Chernobyl Nuclear Power Plant, causingradioactive dust to spew kilometers into the air. Radioactivity in the clouds would then travel hundreds of kilometers to as far as the United Kingdom in the following days (The battle of Chernobyl, 2006: documentary).

Layer #1: Fire Response

One minute after the explosion in the reactor building, the fire alarm sounded in Fire Station No.2, which is located next to, and responsible for the power plant. Vladimir Pravik, who was in command of this fire station, arrived with three fire engines and soon realized that they will need reinforcements from the surrounding fire stations. Pravik called upon the fire stations of Pripyat, Chernobyl townand Kiev region for assistance with the fire (Medvedev, 2011: 41-43). Pripyat, being the closest, under the command of Kibenok, arrived on the scene just a few minutes after Pravik (Anatoliy, 2013: online). They were followed by the station of Chernobyl town, and later Kiev. The fire took 5 hours to contain, during which the firemen received fatal doses of radiation and were admitted to the Pripyat hospital before being transferred to Moscow (Medvedev, 2011: 42).

It is important to note the levels of radiation that these firemen were exposed to while having no radioactive protection, neither in the form of clothing nor respirators (Medvedev, 2011: 43). Seeing that the wind was blowing the radioactive cloud north-west at the

time, the Pripyat firemen were being heavily radiated before even arriving on the scène (Park, 1987: 55).

Layer #2: Evacuation
The town of Pripyat is a planned town that was founded in 1970 to house the workers of the Chernobyl nuclear power plant. Pripyat comprises of strong Le Corbusian town planning, manifested by rigid spatiality and vast open spaces between buildings (Tzonis, 2001: 72-81). Modernist town planning has received criticism over the years from post-modern thinkers, but it was this rigid, rational town layout that probably saved thousands of lives.

The evacuation was done in a very rational, efficient, and orderly way. Due to the modernist town planning, the busses drove in the ring roads circling the different districts of the town, picking up the inhabitants in front of their buildings (The battle of Chernobyl, 2006: documentary). The buildings were placed as boundaries on the outside of the various districts, or city blocks, thus living towards the inside of the block where a school or kindergarten was normally placed. This arrangement aided the inhabitants to easily get their belongings, and gather on the nearby street that acted as an evacuation route for the busses. It is also the opinion of the author that the vast open spaces on the inside of the city blocks permitted the people to easily see if there were people that were not on the evacuation bus. The difficulty of evacuation can be imagined should Pripyat have been a typical medieval town with a dense and complex spatial arrangement (Bacon, 1976: 100). The evacuation could have taken days, fatally radiating the inhabitants during this time.

The evacuation order came at 14:00 on Sunday 27 April 1986, some 36 hours after the explosion at the plant. The population of 50 000 inhabitants of Pripyat were evacuated in little over two hours (Medvedev, 2011: 145).

Layer #3: Helicopter used in containment of reactor fire.
As the firemen contained the fire of the reactor building, the graphite of the reactor was still burning, unable to be put out with water. In the afternoon of 27 April (shortly after evacuation), helicopters started dropping sand, boron, lead and dolomite on the graphite fire in order for the fire to be suffocated. The whole mission lasted 6 days until thesecond of May 1986 when the graphite fire was contained (Medvedev, 2011: 55-56).

A hand sketch was found at the Chernobyl museum in Kiev, indicating a damaged reactor, the location of Chernobyl town, three sites named Mi-6, Mi-8 and Mi-26 together with routes towards the reactor. In a report by Maj. Gen. M. Masharovsky, the helicopters used in the containment of the graphite fire in the reactor were indeed the Mi-6, Mi-8 and Mi-26. This proves that this sketch was drawn to inform the pilots of the flight plan towards the reactor. The helicopters approached the reactor from the south at a speed of 100-110 km/h and would then time the release of the sand to fall directly into the gaping opening of the reactor building (Masharovsky, 1998: 3). The reason for this tactic was due to the fact that the helicopters couldn't hover above the reactor, as they were then in the direct column of radiation being spewed out by the reactor.

In order to get the release of the sand on target with the reactor, a flight operator was situated on the roof of the Pripyat Hotel and guided, via radio, the release of thefire retardersby the helicopters (Medvedev, 1987: loc. 2320). It is of the opinion of the author that the pilots aimed to approach the reactor at a 90 degree angle to the sight line of the flight operator in Pripyat. This would enable the operator to communicate instructions to the pilots more accurately.

Layer #4a-c:LyudmillaIgnatenko's lived experience
In the book Voices from Chernobyl: The oral history of a nuclear disaster, Svetlana Alexievich compiled monologues of the people who were directly influenced by the Chernobyl disaster. One of these individuals was LyudmillaIgnatenko, the wife of fireman

VasilyIgnatenko who was stationed at the Pripyat fire station. Ignatenko describes her experience very vividly, with specific references to place and time. The author studied the monologue and derived a map that illustrates her story on a cartographic level. These are the summarized experiences by LyudmillaIgnatenko:

Layer #4a
The Ignatenko's lived on the first floor of the firestation where Vasily worked, with the fire trucks on the ground floor. This two storey dormitory building of the Pripyat fire station is located on the south eastern side of the fire station and provides a clear sight line over the flat topography towards the burning power plant. Lyudmilla described the fire as radiating the whole sky, and notes how she was staring at the power plant waiting for her husband to return (Alexievich, 2006: 5). She probably saw her husband's team drive off towards the reactor while experiencing the last few minutes of a non-radioactive city as the radiation cloud was creeping closer to the city with every passing minute.

Layer #4b
At seven o'clock that morning, five and a half hours since the call-out, Lyudmilla was told that her husband was in the Pripyat hospital, and so she ran to the hospital. Police had already encircled the hospital and was only letting in ambulances(Alexievich, 2006: 6).

Tanya Kibenok, who was the wife of the commander of the Pripyat fire station, was also at the Pripyat hospital. Just after 10 o'clock, Lyudmilla and Tanya went to get milk from a nearby village under the instruction of a doctor at the hospital. The exact location of this village is unknown, although Lyudmilla did state that it was about 3 kilometers from the town(Alexievich, 2006: 7). The closest village as the crow flies is 2.7 kilometers to the northwest of the town and it is assumed that this was the village they went to for milk.

Layer #4c
That evening, the wives were told that their husbands were being transferred to Hospital No. 6 in Moscow. They were instructed to bring their husbands clean clothes, and so according to Lyudmilla they ran across the city (Layer #4b) to fetch clean clothes from the dormitory where they lived. While the women were gone, the firefighters were taken to Moscow, leaving the women to return to the empty beds of their husbands(Alexievich, 2006: 7-8).

According to Medvedev the patients were taken to Kiev and flown to Moscow from there. Medvedev further stated that it would have been much faster to fly the patients directly to Moscow (Medvedev, 2011: 138). In the opinion of the author, this could have been easily done as a military airfield was a mere 16 kilometers away at the town of Chernobyl. It will also be this airfield that would be used by the helicopters to contain the graphite fire in the reactor the following six days.

Lyudmilla, went to Moscow where her husband would succumb to radiation poisoning on the 10th of March 1986(Alexievich, 2006: 19-20). He was buried in the Mitino Cemetery in Moscow (Medvedev, 1987: loc. 3102). Two months later Lyudmilla went to Moscow to visit her husband's grave, and it was there where she went into labour and gave birth to a baby girl named Natasha. Natasha died 4 hours later from cirrhosis of the liver due to radiation exposure. Natasha was buried at her father's feet(Alexievich, 2006: 21).

Layer #5a & b: Author's lived experience in 2012
On the second of October 2012, 26 years after the accident, the author of this paper visited the exclusion zone and the towns of Chernobyl and Pripyat. It was here where he walked in the footsteps of LyudmillaIgnatenko, Tanya Kibenok, the brave firemen, the pilots and the evacuees of Pripyat.

"The route was quite simple, we drove to Chernobyl, stopped at the memorial to the evacuated towns, and from there we drove to Pripyat, passing the power station to our right. In Pripyat (Layer 5b) we took a right turn towards the Pripyat hospital. This is the hospital where the firemen were taken from the power station. I got out of the car and walked up to the steps, the trees on the

street juxtaposed against the facade of the hospital created a natural courtyard tensioned by a single white gynecologist chair towards the right."

"From there we visited the river cafe and cinema. It was here that I realized that this modernist town was pedestrian friendly and very walkable, something not seen very often in modernist urban planning. We got in the car and drove back the way we came in, for lunch."

Layer #5c
"We visited the power station after lunch and was struck by the sheer scale of the sarcophagus that acts as the anchor for this monstrous event. After the visit to the power station we drove towards the city again to visit the city centre."

Layer #5b
"We passed the City Administration building, Hotel and went on towards the Palace of Culture. The vastness of Lenin square that terminates the main street into Pripyat is quite intimidating at first, but strangely, grows familiar very fast. From the Palace of Culture, we went around the back towards the theme park that was never used. It was supposed to open the day after the accident. We got in the car and left Pripyat through the main street known as Lenin Street."

Time Space Knots
Acombined map was constructed (refer to Combined Map) that combines all the previously discussed events. This combined map generated not only time-space knots, butroutespresented themselves too, and created a time-space pattern on the landscape.

These time-space knots are indicated on the combined map through yellow circles. These circles vary in size due to the number of events that share that specific space, but in different times. It can thus be said that the circles indicate the exact location where various people contributed to a space being made, as argued by Massey. Through events and onto the landscape, this pattern was stamped in time (Refer to Combined Map & Time-Space Pattern map).

Readers of this paper are encouraged to view the combined map, and refer to the different layers in order to fully grasp the complexity and interconnecting properties of the narratives discussed. Due to the complexity and range of knots and narratives on the combined map, the author will only discuss a few knots in the combined map.

Knot #1: Author as onlooker to firemen - Combined Map
The area around the reactor is in a glow of flames, offset by the pulsing lights of the fire trucks. Ambulances speed past the author in space, but not time(Point of interest #4), on their way to Pripyat Hospital. Lyudmilla is probably looking at this fire now, her 26 year old sight line targets the power station together with the sight line of the flight operator on Pripyat Hotel. Helicopters will soon start flying overhead, desperately fighting to contain the reactor fire. The view towards the sarcophagus on 2 October 2012 stands as an anchor tying narratives through time onto this space and landscape.

Knot #2: Author meets LyudmillaIgnatenko in space, but not time - Combined Map B
When the author got out of the car at Pripyat Hospital (Point of interest #1), he got onto the street that Lyudmilla crossed in 1986 on her way to her fatally radiated husband. The author walked with Lyudmilla through the courtyard as ambulances wailed in the street before turning into the hospital grounds. Lyudmilla was terrified with this sight, but the author stood next to her in an empty courtyard in a different time, with just a rusted hospital chair and a building succumbing to the forces of nature.

Knot #3: A Highway of Narratives - Combined Map

On his way to Pripyat, the author passes the power station on his right. This route is saturated with interconnected narratives. They will later briefly pass through a dense time-space knot. This knot is the space where ambulances from the reactor, evacuation busses, the Pripyat fire station, Lyudmilla's sightline and the helicopter flight pattern intersect with the author's route. Although these narratives meet each other in space, they did not meet each other in time.

Conclusion

Space-time patterns on landscapes will exponentially increase in complexity over time, but also through the increase of individual narratives. What made the Chernobyl disaster such an unique milieu, is that due to the traumatic uprooting of the inhabitants, coupled with the alienation of the radioactive landscape, this landscape acts as a time capsule and these events can be spread wider in the time-space narrative. The author is of the opinion that in such a time-frozen landscape, the spaces are being made with absence rather than presence. Thus, limited human presence in such a space will have a greater influence to the construction of the space through time.

Reference list:

Alexievich, S. 2006. Voices from Chernobyl: The oral history of a nuclear disaster. New York: Picador.

Anatoily, R. 2013. Fantasy Batozhnojo limitless. [online]. Available from: <http://www.swrailway.gov.ua/rabslovo/?aid=62> [Accessed 15 February 2013].

Anderson, B. 2005. For Space: Doreen Massey. In: Hubbard, P., Kitchin, R. & Valentine, G. (eds.). Key Texts in Human Geography. London: Sage Publications Ltd, pp. 228-230.

Bacon, E. 1976. Design of cities. New York: Penguin Books.

Masharovsky, M.M. 1998. Operation of helicopters during the Chernobyl Accident. In: Current aeromedical issues in rotary wing operations, San Diego 19-21 October 1998.

Medvedev, G. 1987. Chernobyl notebook. Kindle edition: DoD Reports.

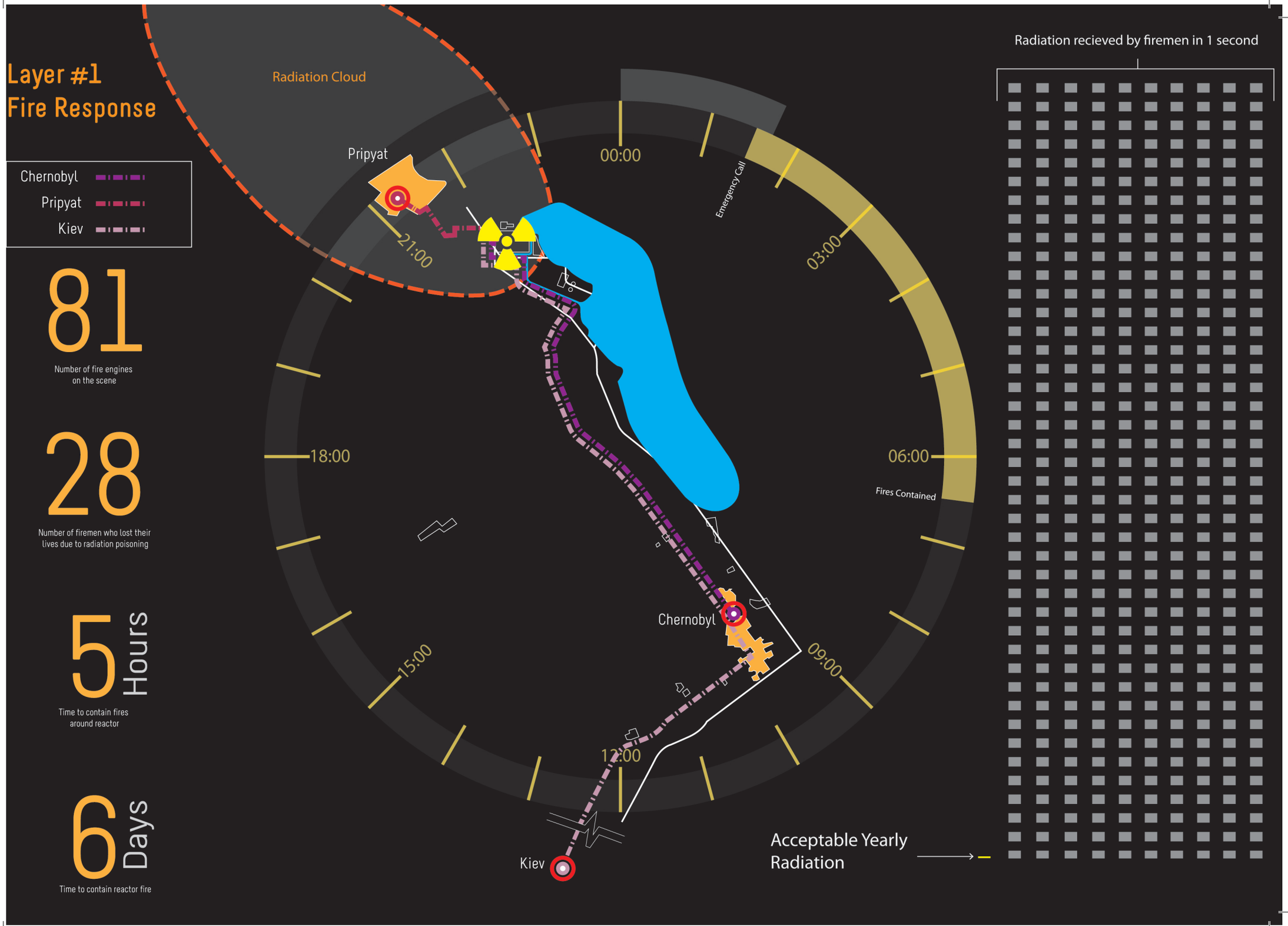
Medvedev, Z. 2011. The legacy of Chernobyl. Republication. Nottingham: Spokesman.

Park, C.C. 1987. Chernobyl: The long shadow. London: Routledge.

The battle of Chernobyl, 2006.Documentary.Directed by Thomas Johnson. Italy: Play Film.

Tzonis, A. 2001. Le Corbusier: The poetics of machine and metaphor. New York: Universe Publishing.

Layer #1
Fire Response



81

Number of fire engines on the scene

28

Number of firemen who lost their lives due to radiation poisoning

5 Hours

Time to contain fires around reactor

6 Days

Time to contain reactor fire

Layer #2
Evacuation



50 000

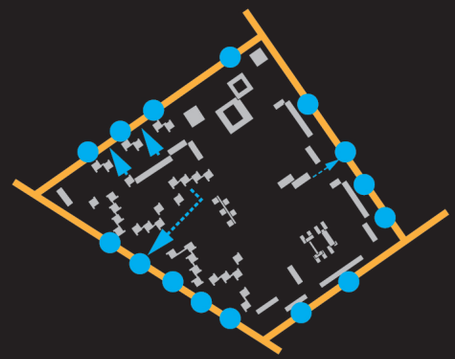
Number of inhabitants evacuated from Pripyat

20 km

Length of the line of busses used in evacuation

2 Hours

Time to evacuate the inhabitants



Typical Micro-district Evacuation Plan

- Evacuation Bus Route
- Route to Ring road
- Assembly Point

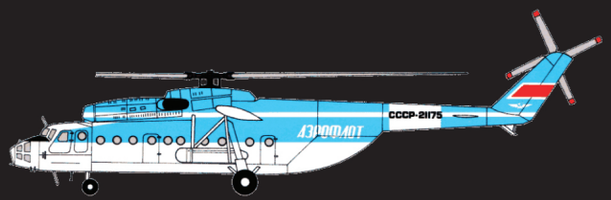
- Evacuation Bus Route
- Central Evacuation Point

Layer #3
Helicopters used to contain reactor fire.



Mi-26

Payload: 20 000 kg



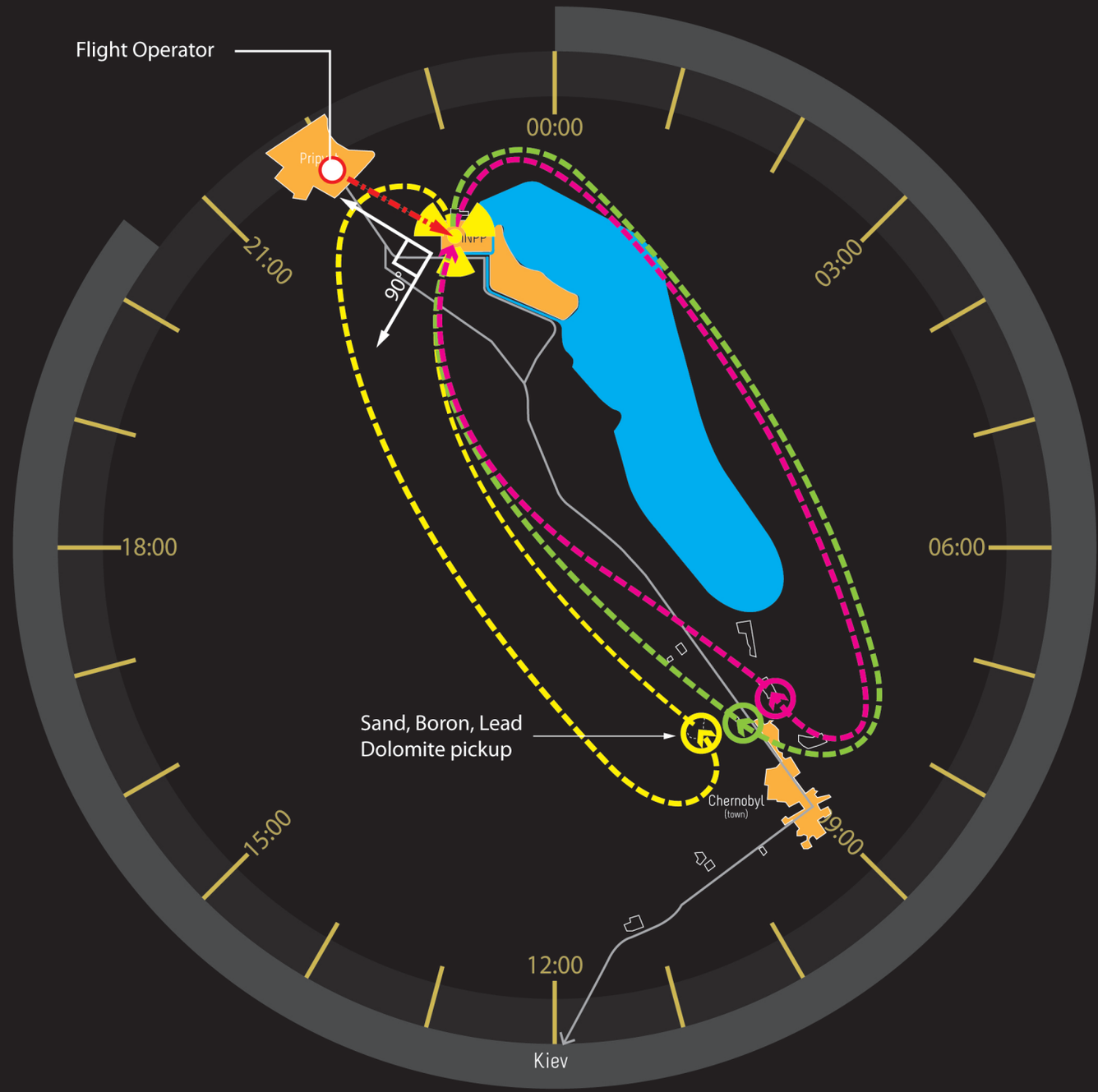
Mi-6

Payload: 12 000 kg

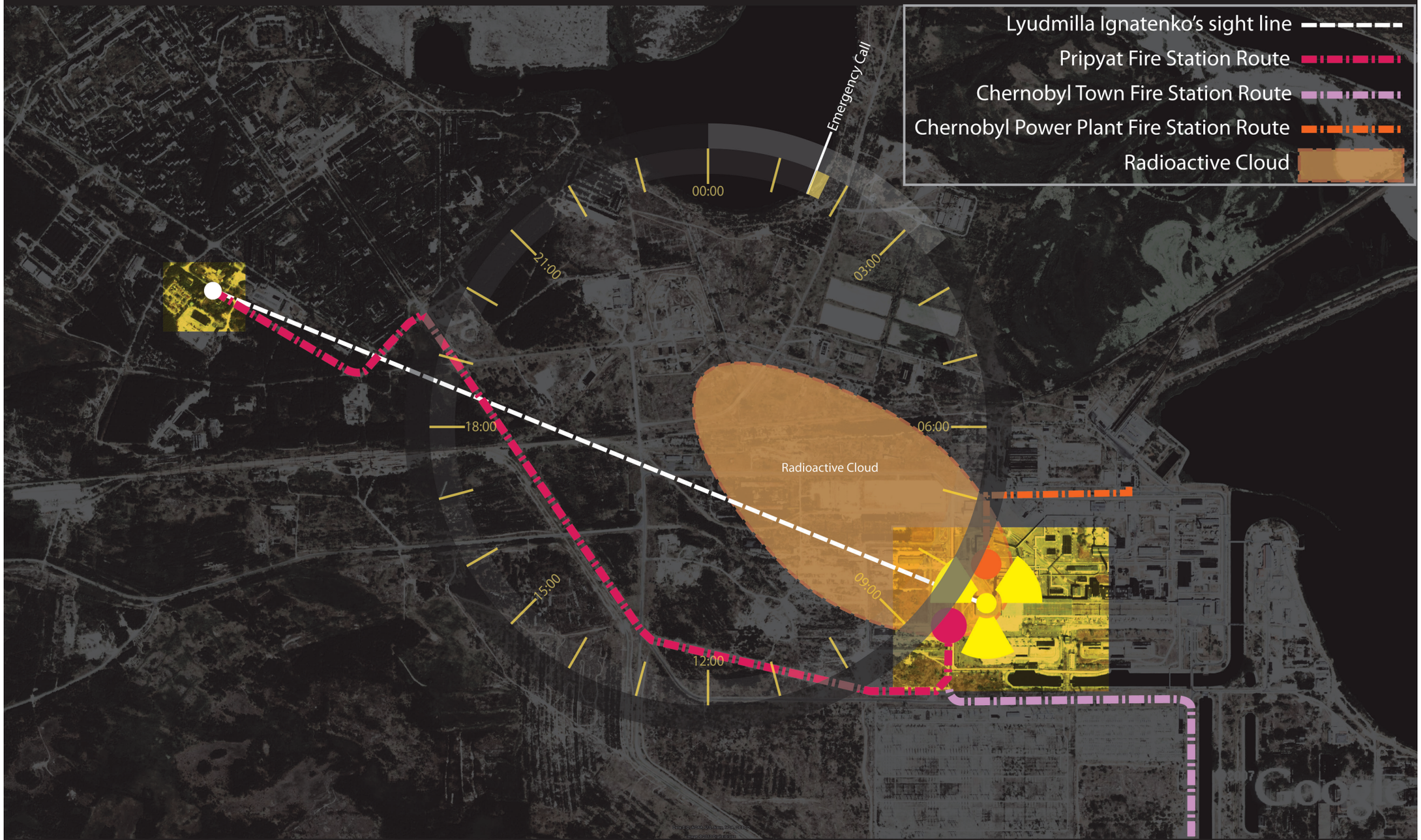


Mi-8

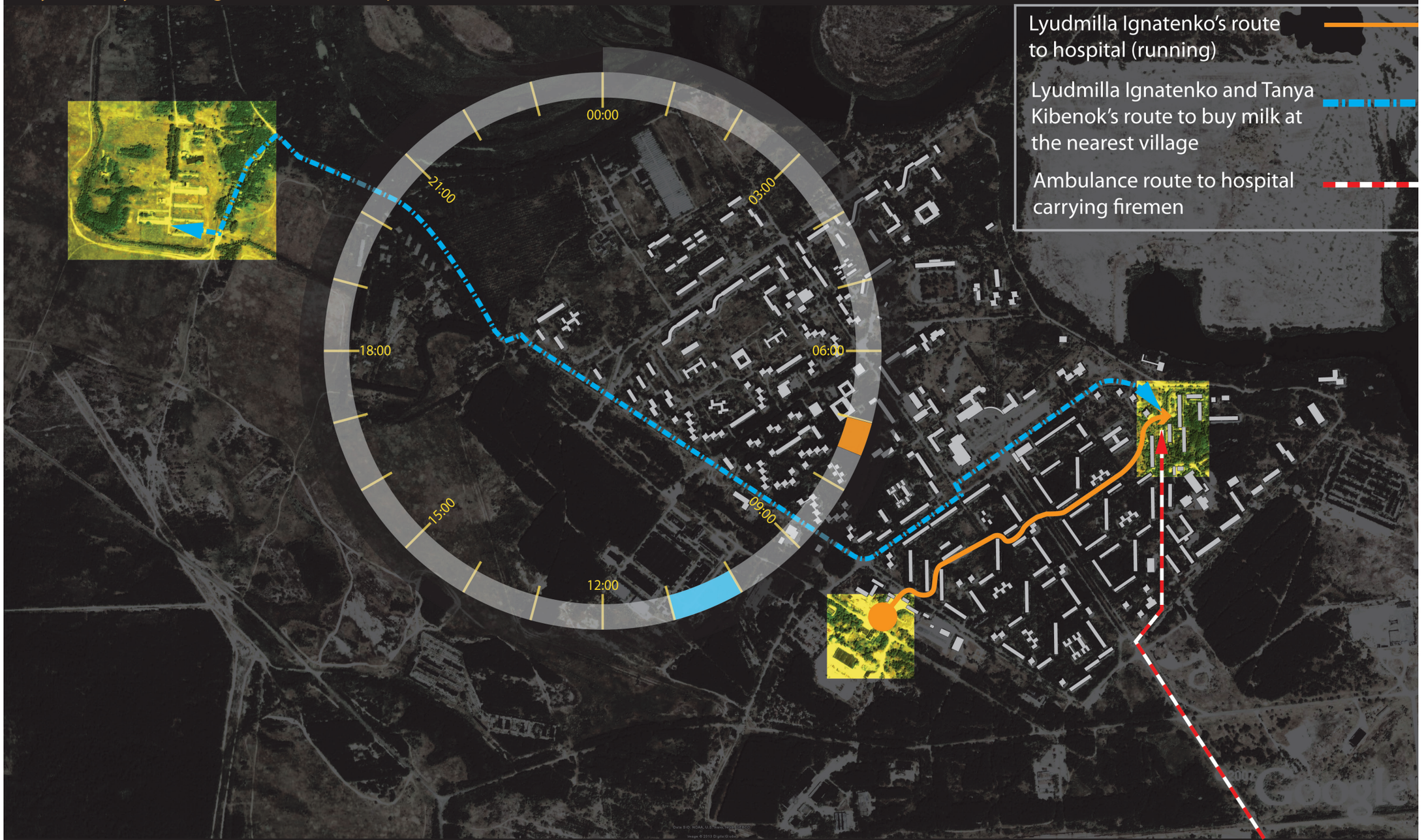
Payload: 4 000 kg



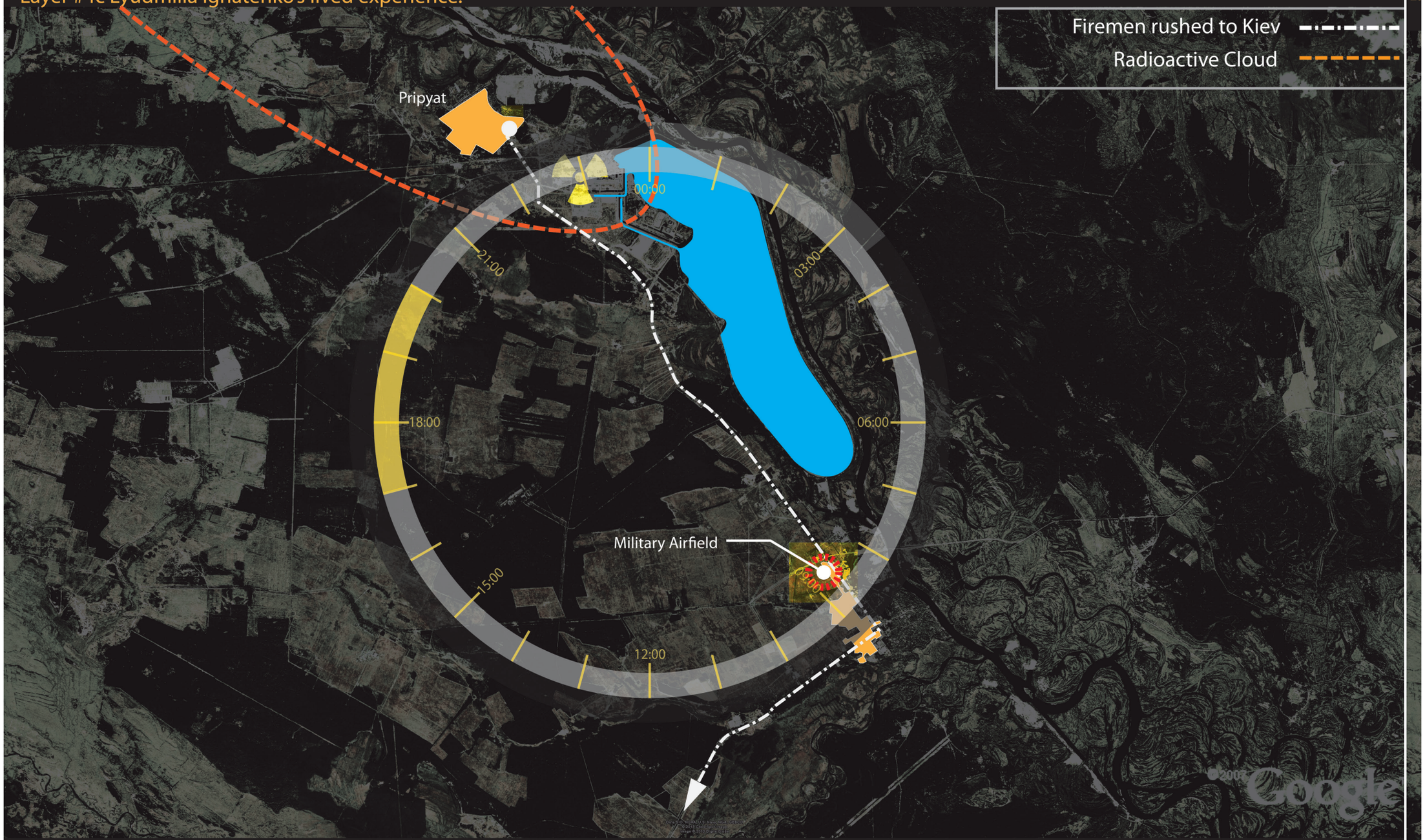
Layer #4a Lyudmilla Ignatenko's lived experience.



Layer #4b Lyudmilla Ignatenko's lived experience.



Layer #4c Lyudmilla Ignatenko's lived experience.



Layer #5a Author's Lived Experience



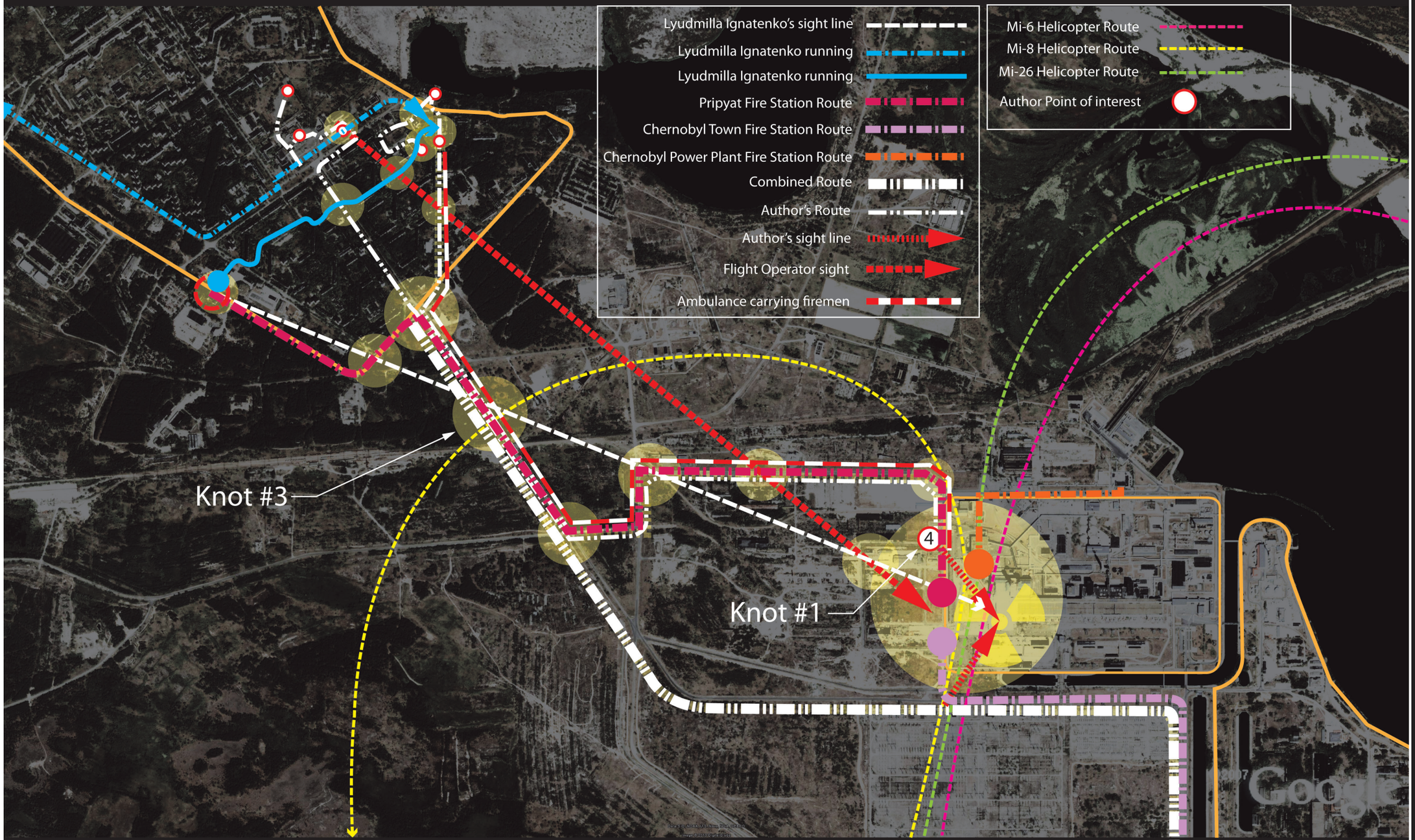
Layer #5b Author's Lived Experience



Layer #5c Author's Lived Experience



Combined Map with time-space knots



Time Space Pattern

