

faith in phases

*linyi dai*



Thesis submitted in partial fulfillment of the  
requirements for the Degree of MASTER OF  
ARCHITECTURE at the Rhode Island School of  
Design.

Linyi Dai, 2015

Approved by Master's Examination Committee:

Enrique Martinez, Thesis Coordinator



Jason Wood, Primary Advisor

Andy Tower, Secondary Advisor

Degree Conferred: May 30th, 2015

to Senmu



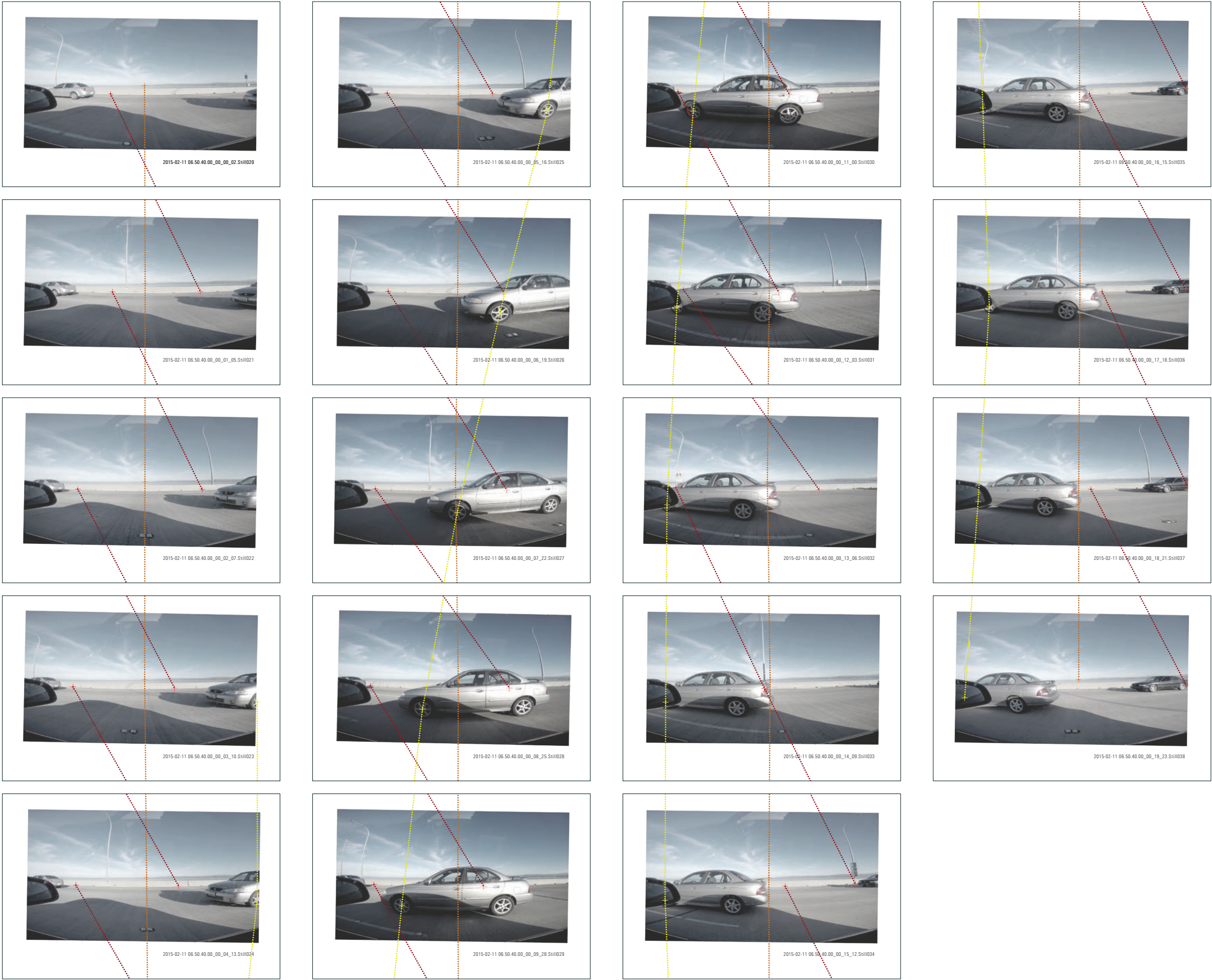
table of contents

one		sense of speed I	1 – 6
two		sense of speed II	7 – 14
three		aligned sense of speed	15 – 22
four		operation on duration	23 – 28
five		faith in between phases	29 – 44

faith is regained by aligning threads of  
movement rates and allowing moments of  
overlap between phases of movements.

one | sense of speed I

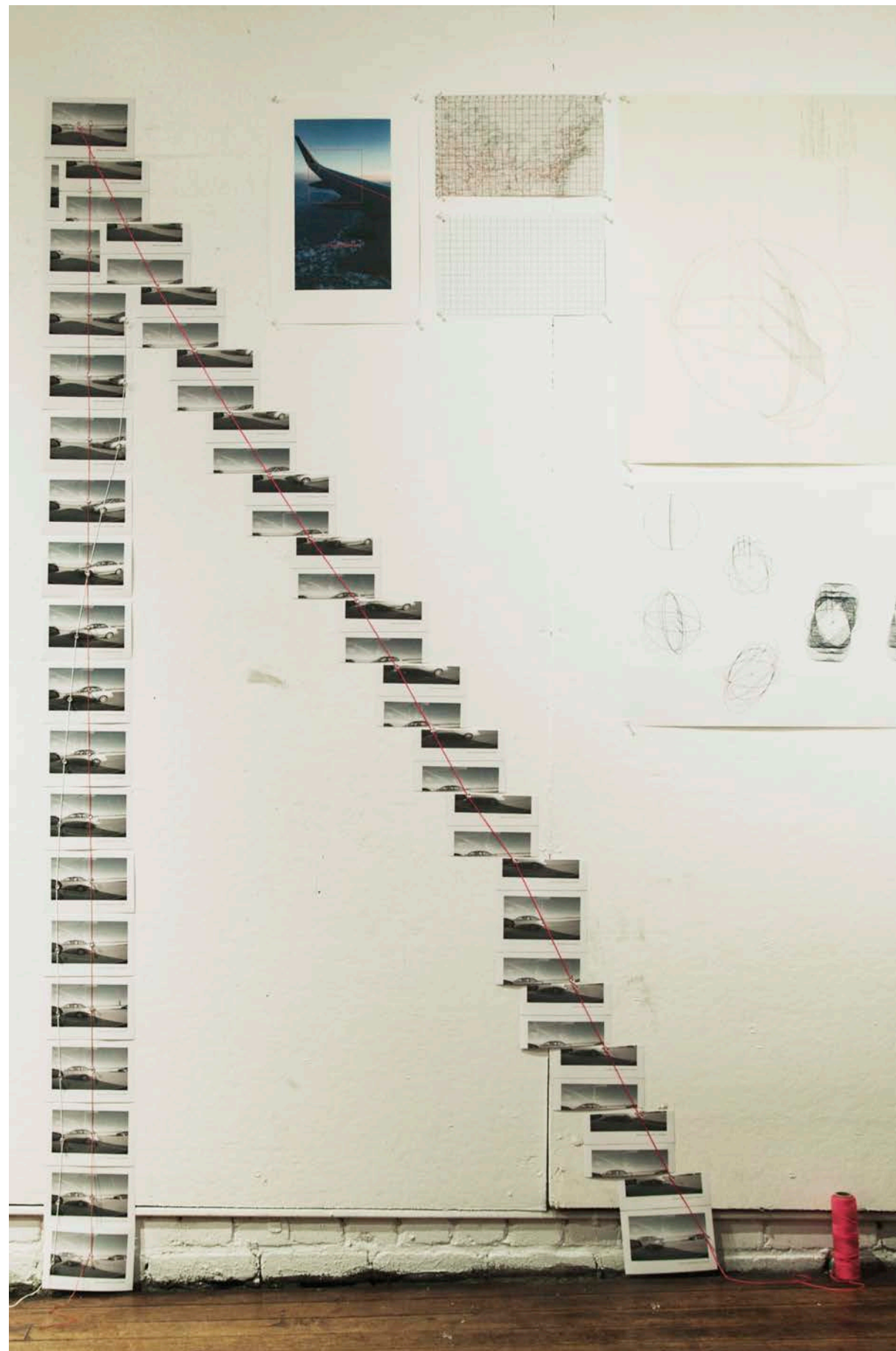
Closer things seem to move faster,  
further things slower. When driving a  
car, the trees along the road pass by  
fast, while the landscape in distance  
seem to be there always.





In order for speed to be continuous, frames need to be cut up.

Discrepancies between the strings are the differences in the parallax among things of different distances from the frame. It's the amount of space required to compensate the consequence of stitching time together.





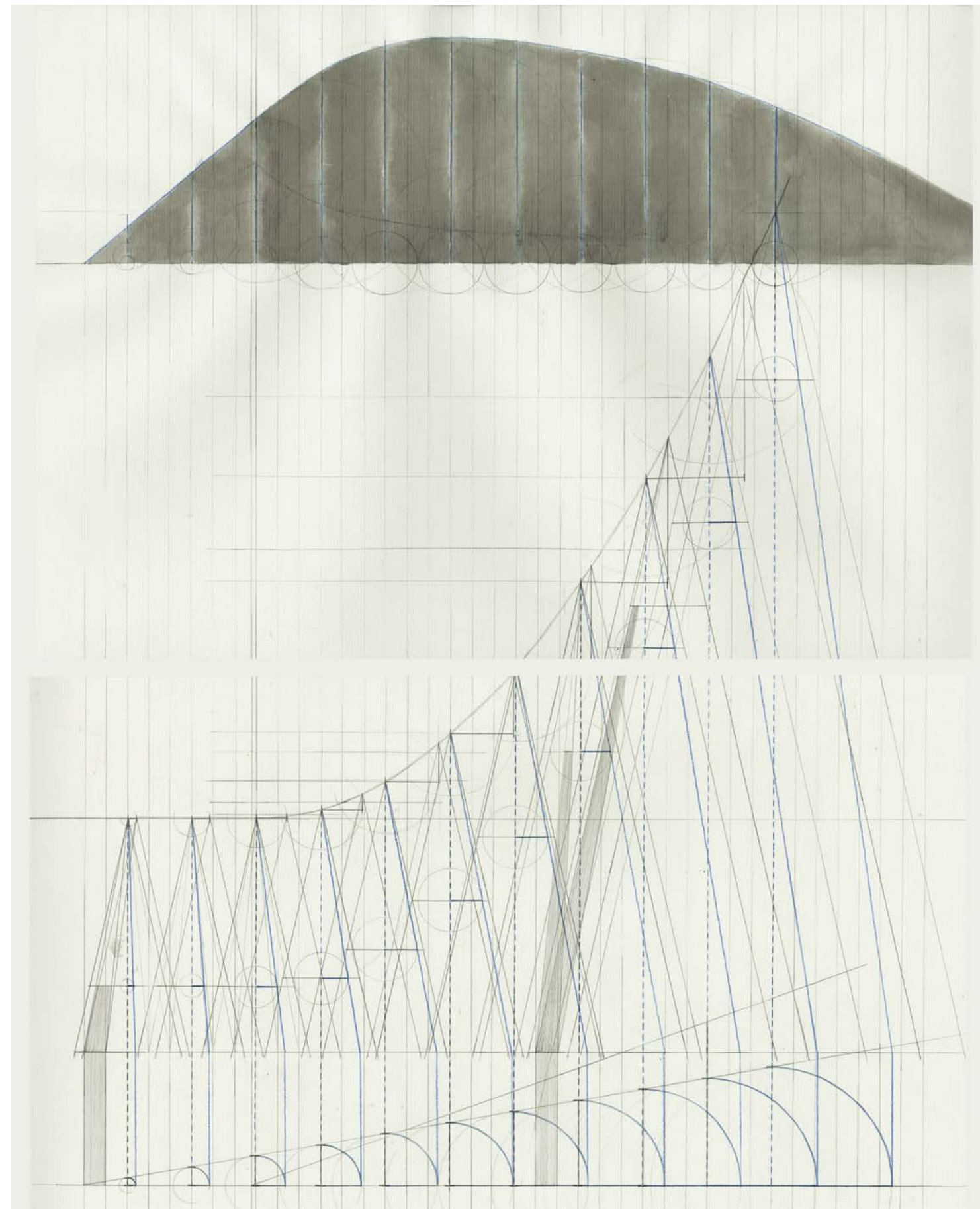


Sense of speed of a moving object is its displacement on the frame – the viewing plane on which the object's image is projected from the vantage point of the observer.

On an airplane, the window serves as a frame. We sense speed through the frame. Sense of speed is proportional to (the absolute speed of the moving body / distance between the projected

object and the frame).

In a plane taking-off process, its absolute speed is constantly growing and its distance to the ground (or an object on the ground) is growing too, but parabolically. Therefore, the profile of sense of speed is one that grows first and then drops.

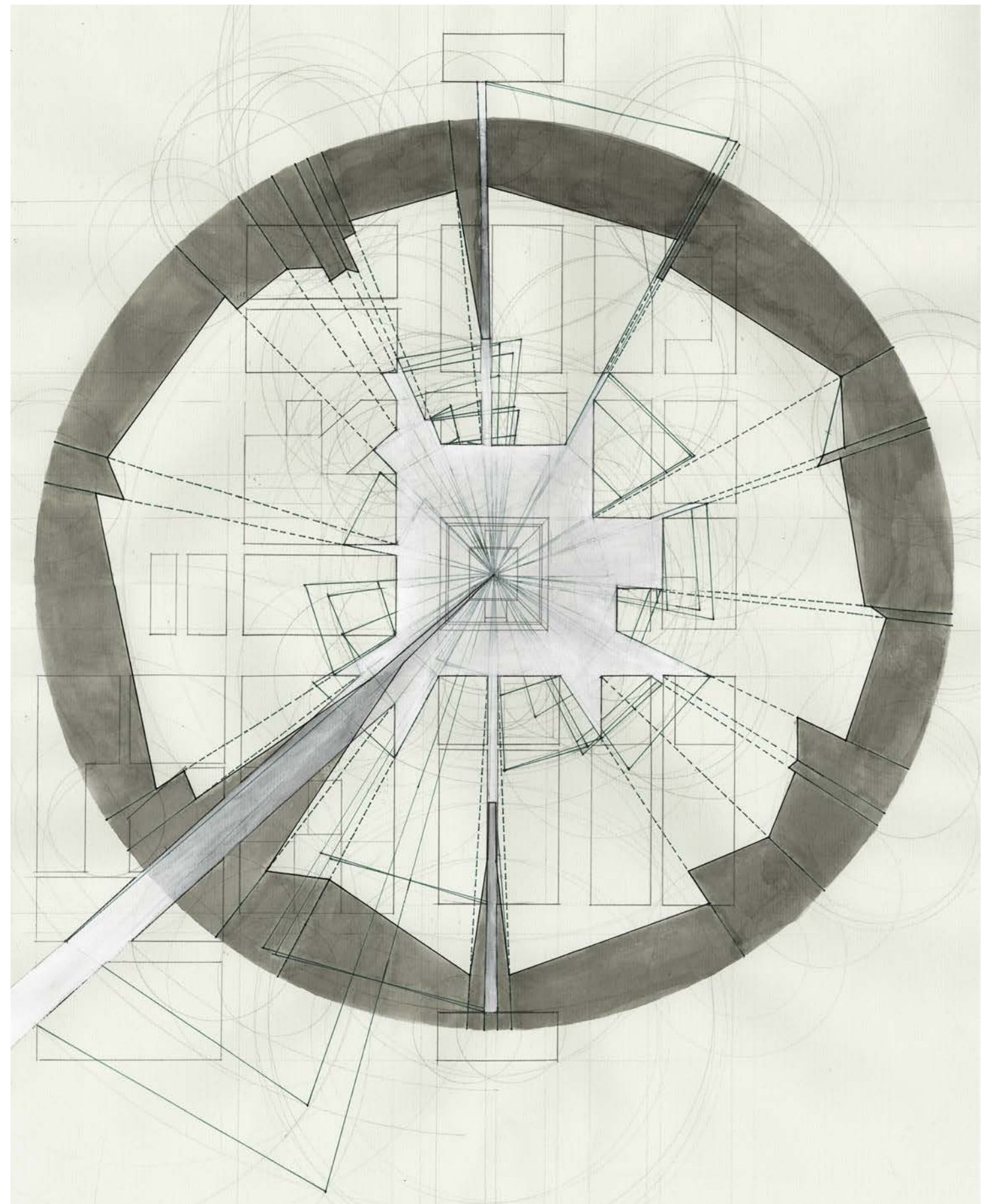


Angle constitutes to sense of speed as well.

On a skyscraper, people look through those city telescopes to view the city scape.

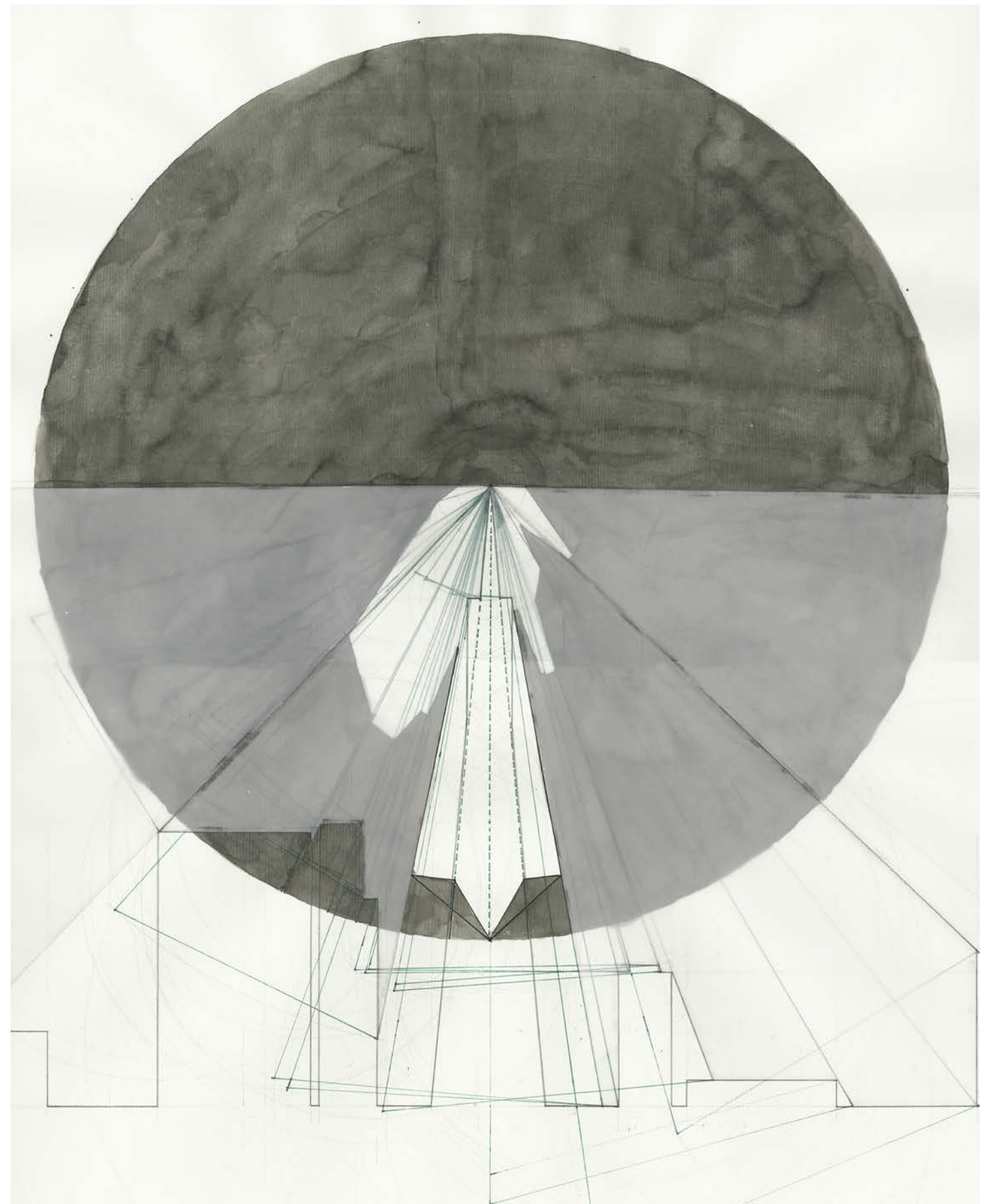
With constant angular speed, the city in the viewfinder moves fast and slow proportional to the distance between the object projected and the frame.

A faraway building would disappear in the viewfinder in a flip and a close surface takes a few seconds to pass.

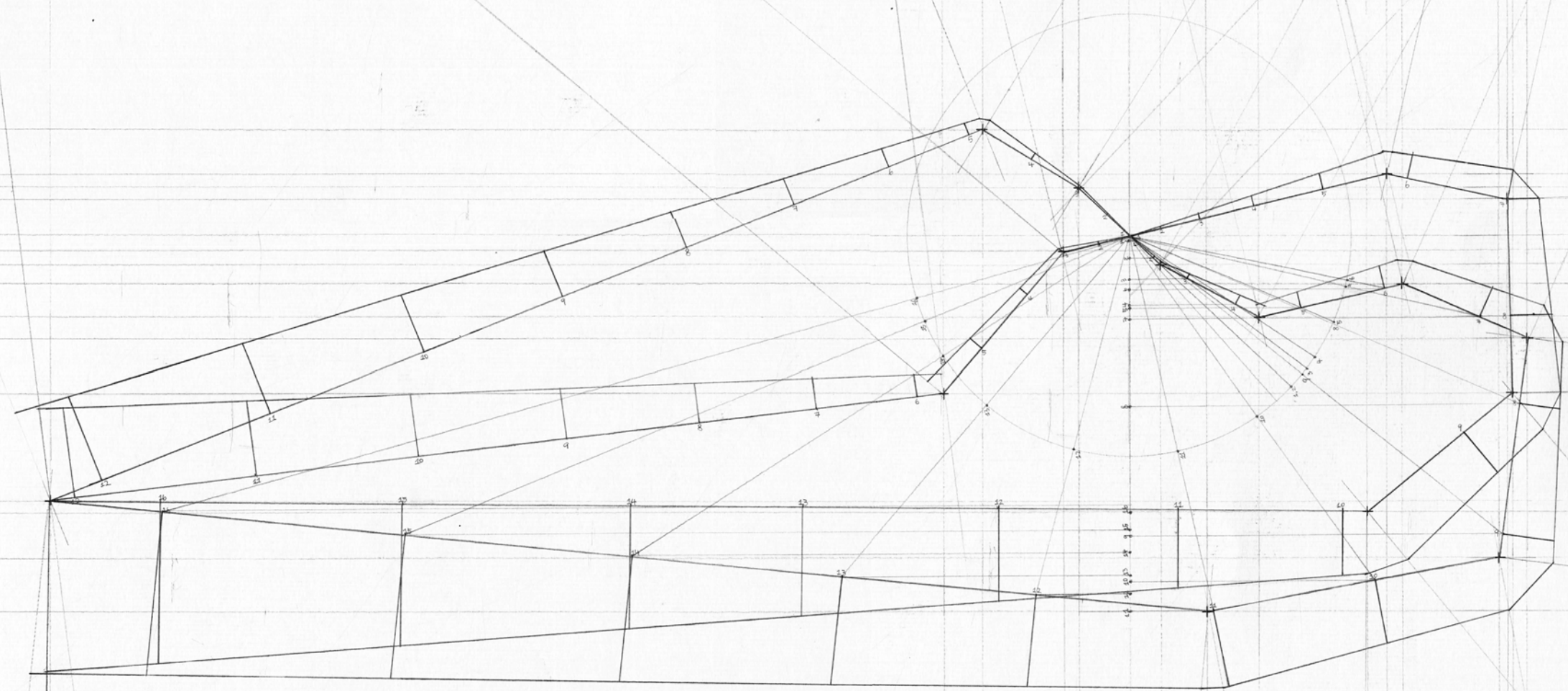




Looking up and down into the section of the city, there's a horizon cut into the speed profile sphere, because beyond that, one sees into the infinite space.









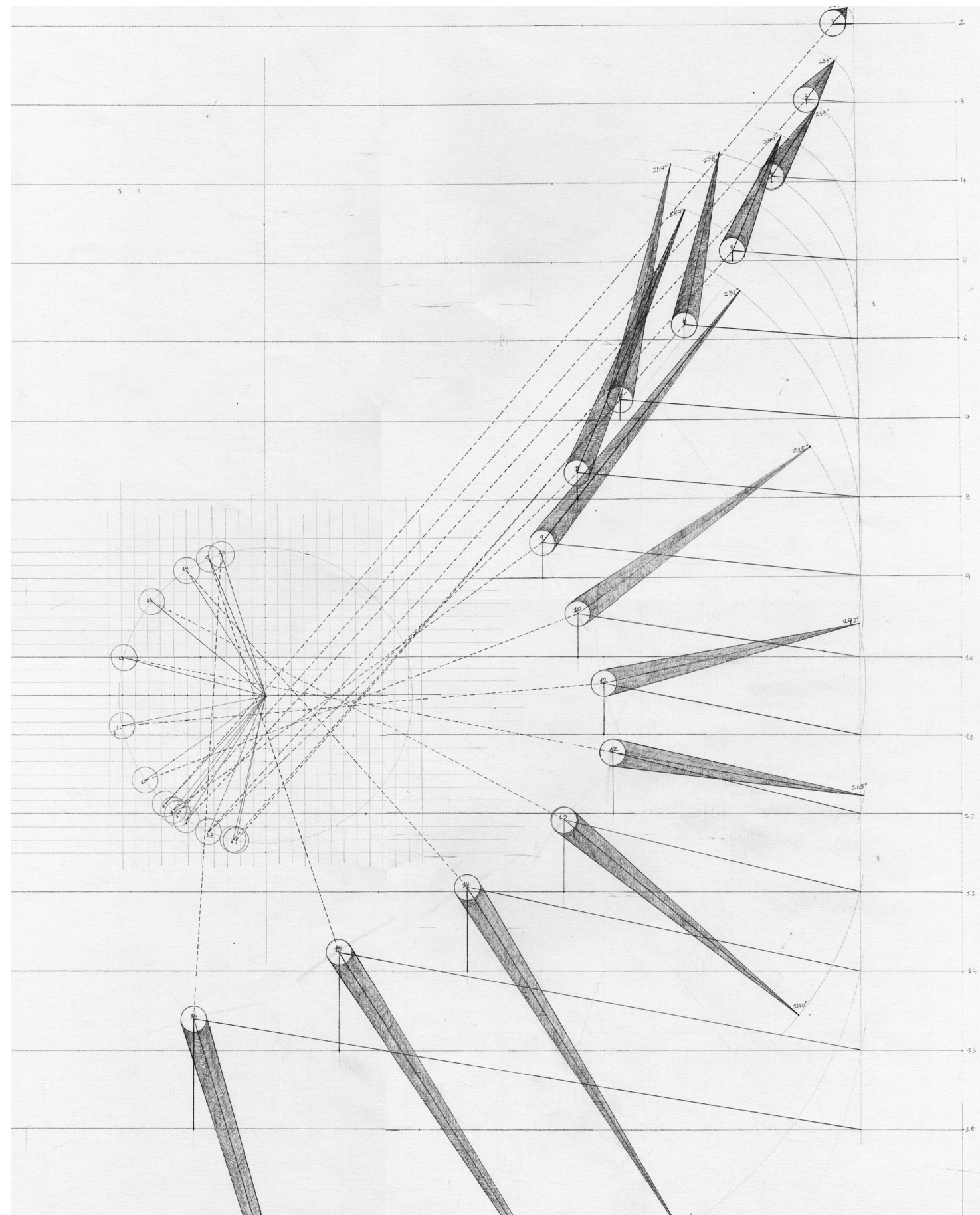
Projected from a three dimensional trajectory in space to a two dimensional curve on the frame, the object's true speed is collapsed in the lost of dimension. The frame now conditions the experience of speed.

A taking-off airplane accelerates and occupies a three dimensional space. Architecture is the frame that can render such acceleration into a different speed profile to fabricate alignments with other speeds.

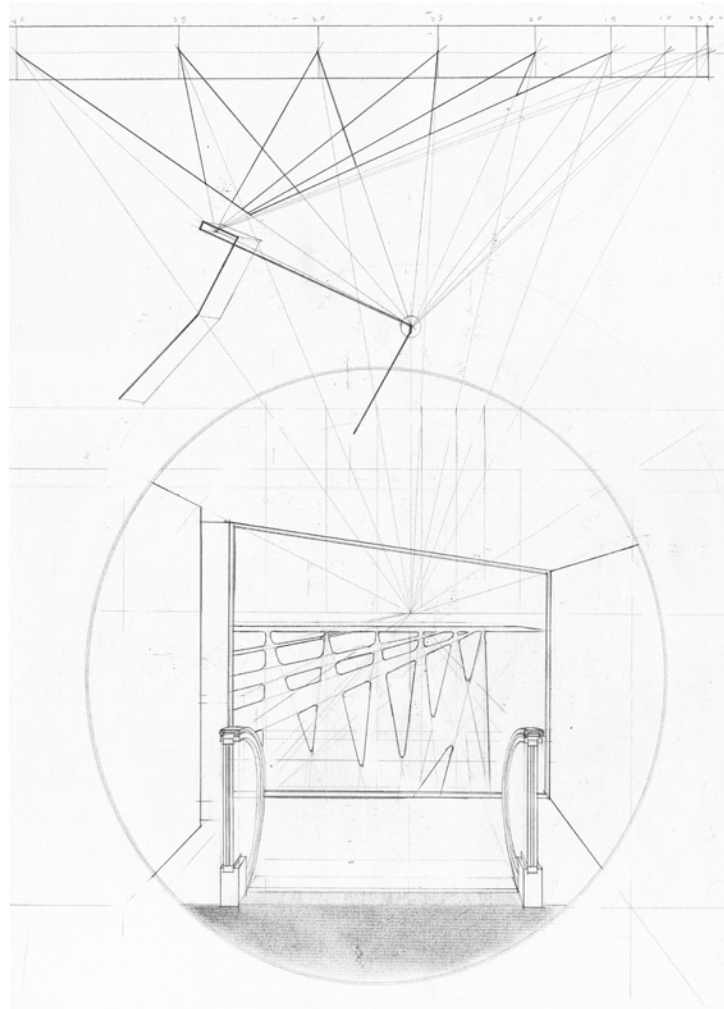
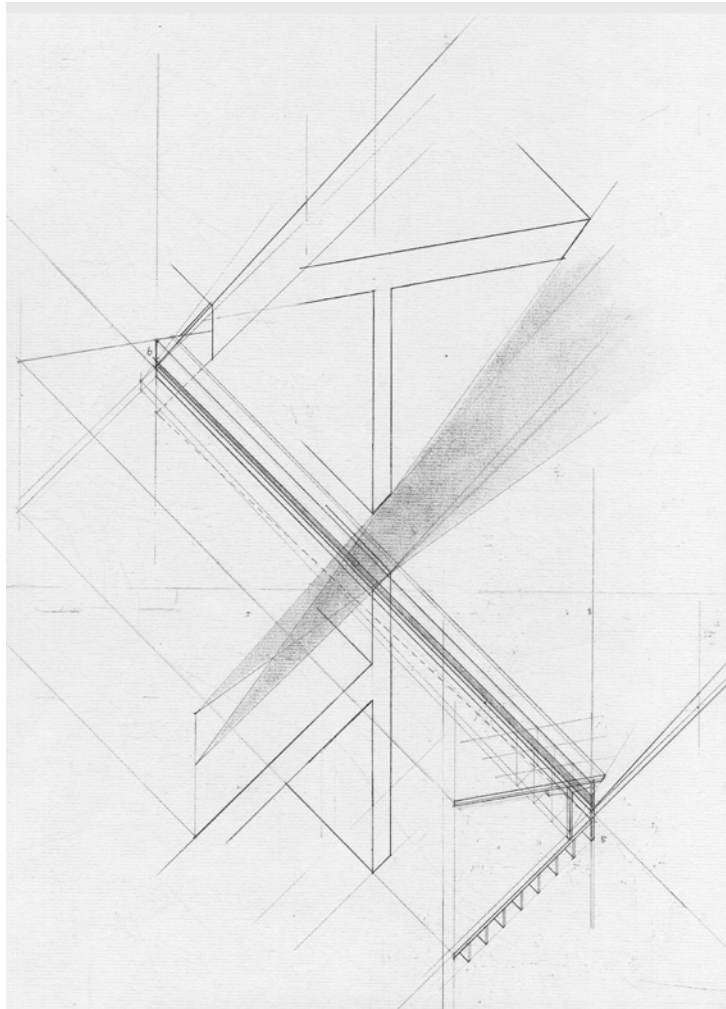
A facade provides openings and thickness of framing. By adjusting thickness, the opening rhythm and orientation, a dictated way of

inhabiting the space behind the facade is embedded in itself.

To map the accelerating trajectory of a taking-off plane to align with a constant speed of movement within the building – such as people mover, escalator, walking or running, the openings are shaped and placed in the facade, and a specific behavior is embedded.

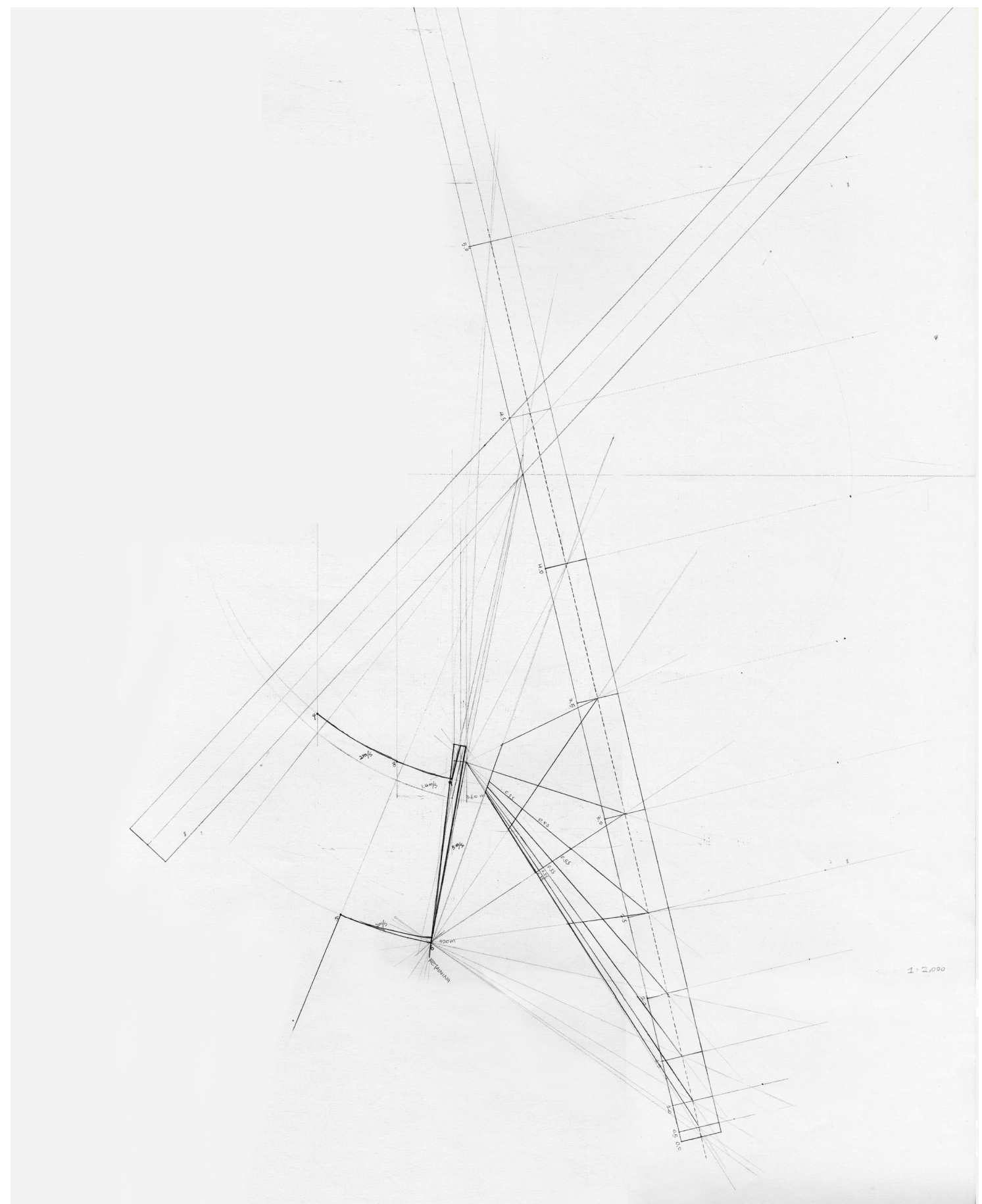






Moments of alignment are key in this scheme. At certain key frames, two speed trajectories encounter each other and result in the encountering of the two moving objects.

In constant parting and reuniting, the frame serves as the apparatus for two sets of time lines. Space stretched and compressed, time align.

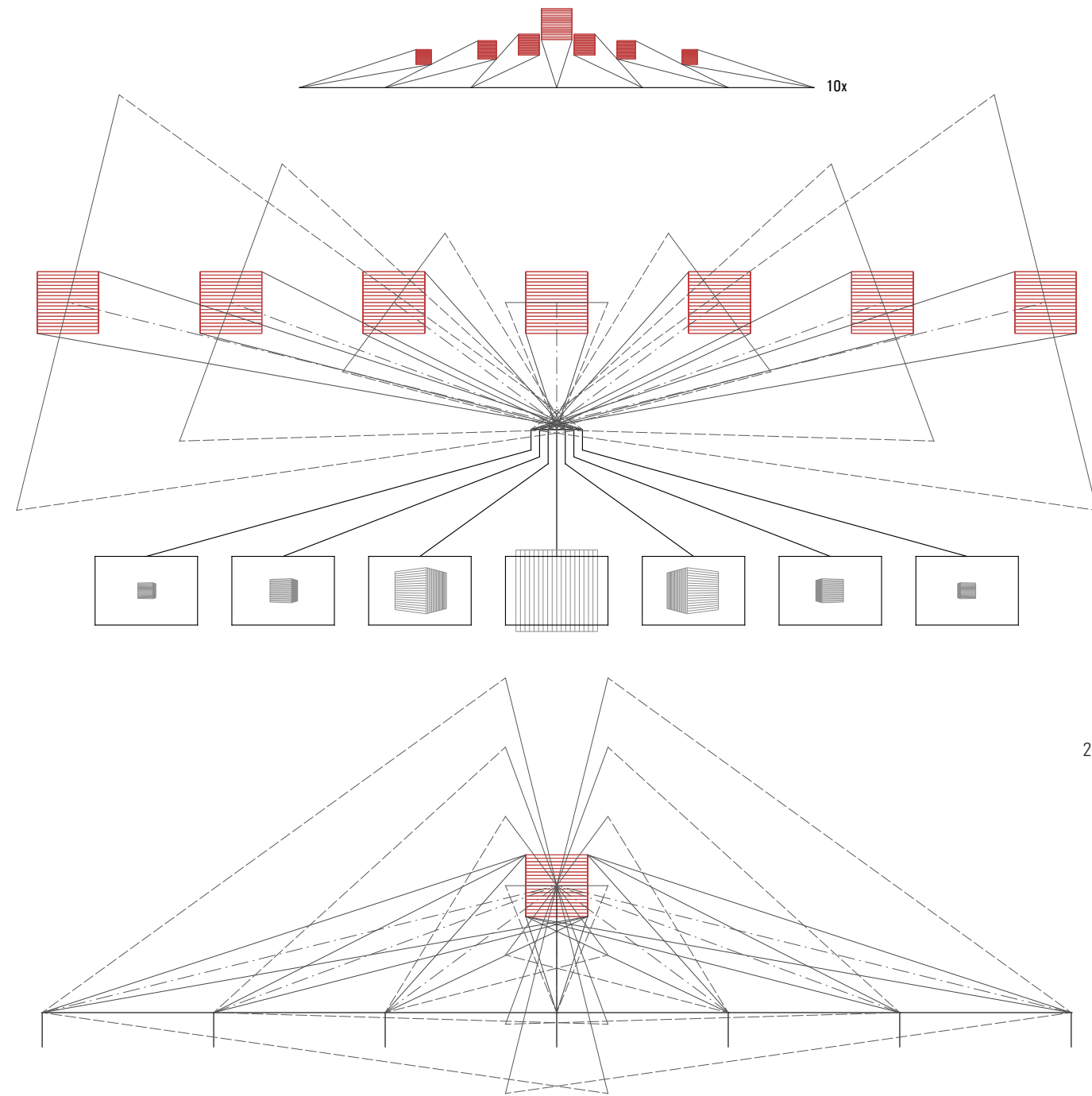
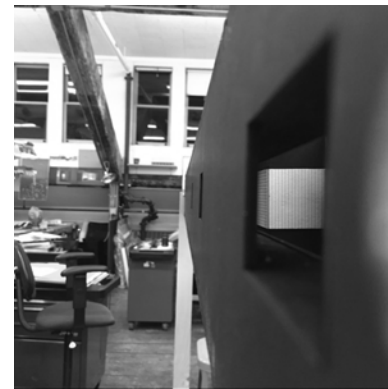
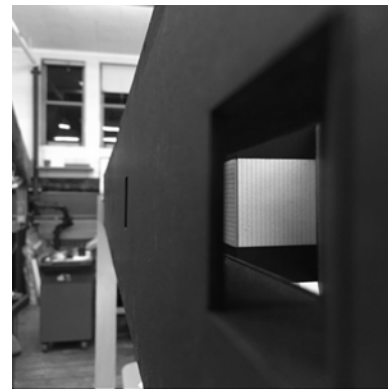
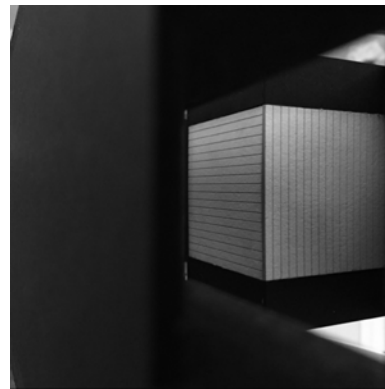
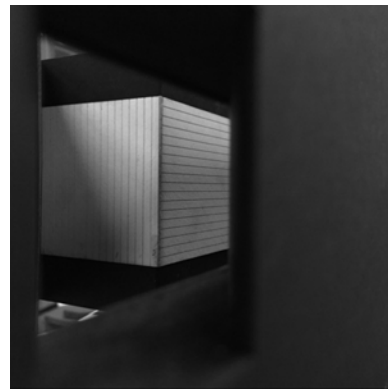
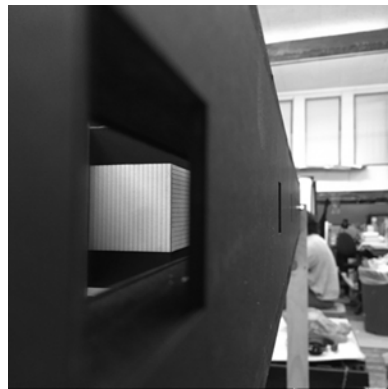
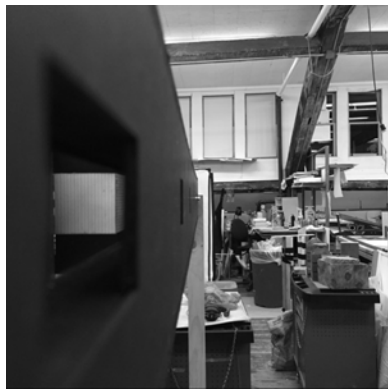




A cube viewed by an observer with the speed of 30 m/s (driving) is compressed in space to accommodate the same experience of an observer with the speed of 1.5 m/s (walking).

Operation in time impacts the space convolutedly. By employing key frames, the convolution can be selectively unfolded and constructed. The frame is the interface to the

space-time continuum that embeds human behavior. It's the way architecture is inhabited.





Particular to my height and walking speed, this one to one scale construct pertains to be my interface that transforms a time-based operation to a spatial construct.







This architectural proposal is about regaining faith by aligning threads of movements and allowing moments of overlap between the movements.

It originates from the study of perceived speed between two movements, specifically on how their absolute speeds, distance in between, and angle change during movements affect the sense of speed perceived between them.

The reason for choosing airport as program to apply previous studies is that airport consists of multiple phases, each having multiple moving bodies with very different speed and duration. Also, it's a place where there is lack of faith, mainly due to the separation between phases and movements, which result in fragmented experience and insecurity.

So this proposal is a series of constructs of an airport based on such phases: check-in, security check, moving to gates, waiting and boarding. And thee are mainly three types of movements in those phases: passenger, luggage and the airplane.

The constructs aim to eliminate the separation between phases, and to create overlap between the movements of the three types of objects.

A passenger brings his luggage to the check-in counter and drops it off. While he waits in line to check-in, he sees through the holes to a level below, where the security check queue is moving.

Then he takes the escalator to join the security check line, where the ramps go down so he'll have a full picture of the situation ahead of him. If he is handicapped, he has the privilege

to use the elevator to go to a priority line on a lower level, to make sure he catches up with the group.

Meanwhile, the luggage checked in is being transported through the luggage shaft to the same level with passengers.

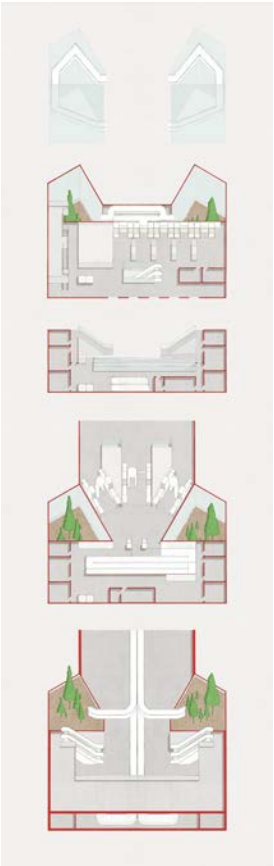
After security check, passengers and their luggages move to their gates on different levels while they maintain visual access to each other occasionally through the porous floor plates.

Approaching the gates, passengers have an option to stay on the higher level which is assigned for long-time waiting, meaning there are longer duration programs designed in the space. They have visual access to the short-time waiting areas underneath them and they also have a view of the runway and taxi ways so they'll be notified when their planes arrive at the gate.

The short-time waiting seatings on the lower level are on a slight slope for people to have a better view of the situation at the gate. And the waiting lanes are next to the seating sections with assigned boarding group signs.

Arrival phases are similar. Luggage and passenger's are separated in space but always encounter each other along the trajectory till the luggage is claimed by its owner.

I believe that faith comes from the comfort and ease that one gains out of his comprehension of a larger picture. At a place where time, speed, duration are critical, one needs to find faith back in the bridging of phases.



Extruded plan representation of the airport scheme before security point.

From top to bottom:

Luggage shaft: conveyor belt system carrying checked-in luggage to the lower levels.

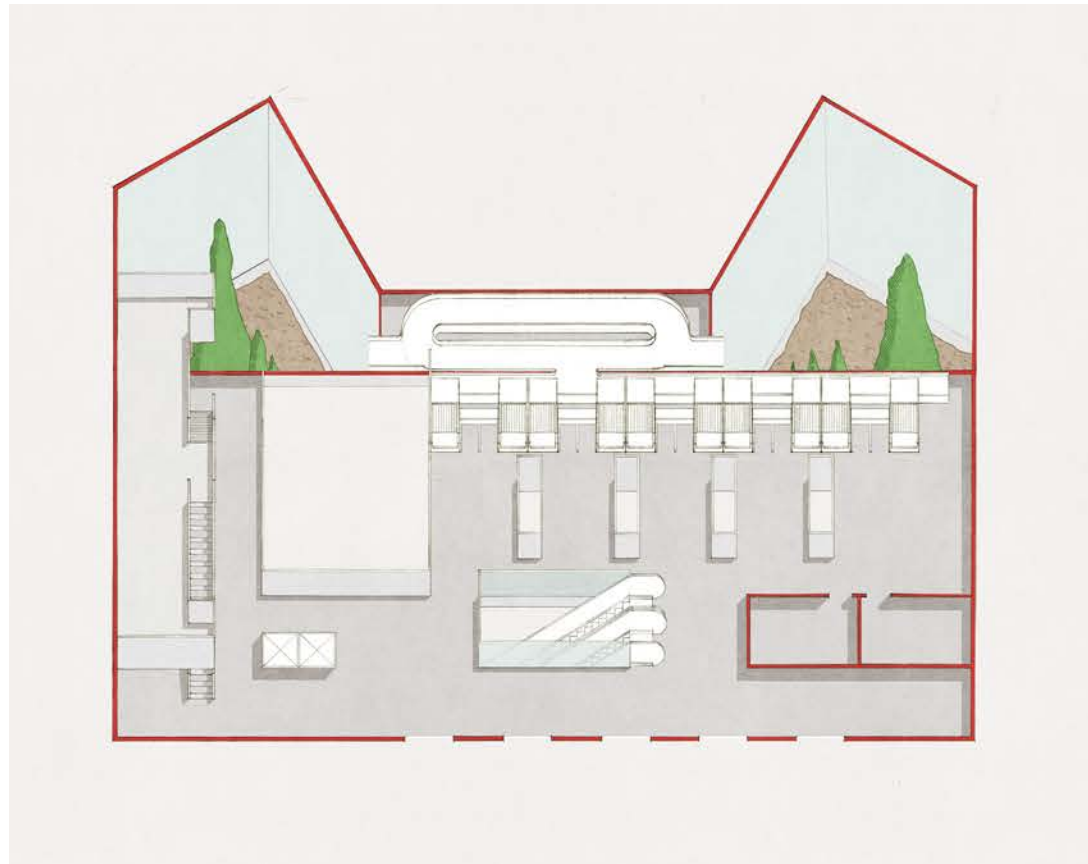
Third floor: departure lobby and check-in booths, with apertures opening to lower floors to see security check phase in queuing areas.

Second floor mezzanine: security check waiting queues on a zig-zag ramp, in order to give view of following phases to waiting

passengers.

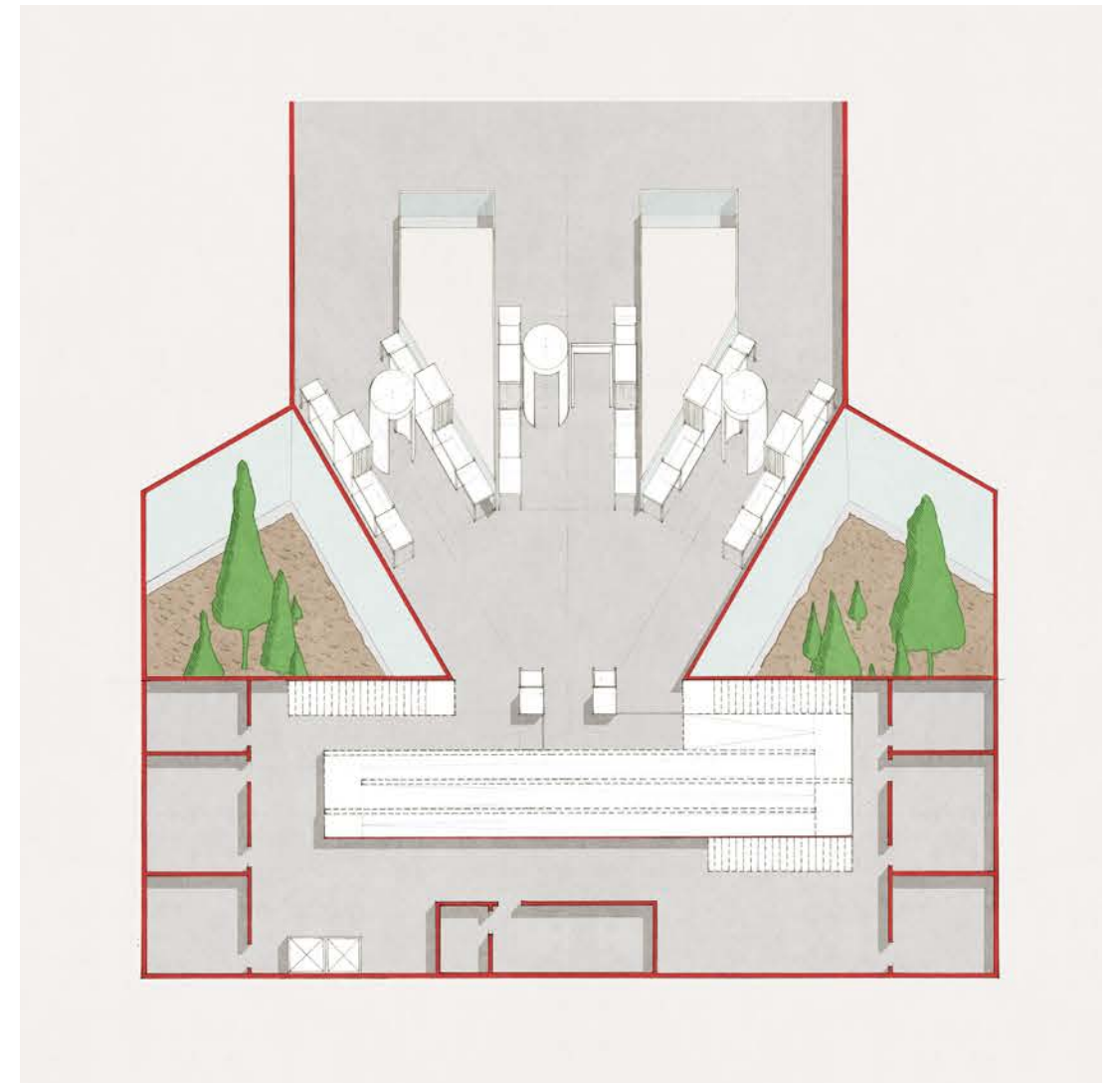
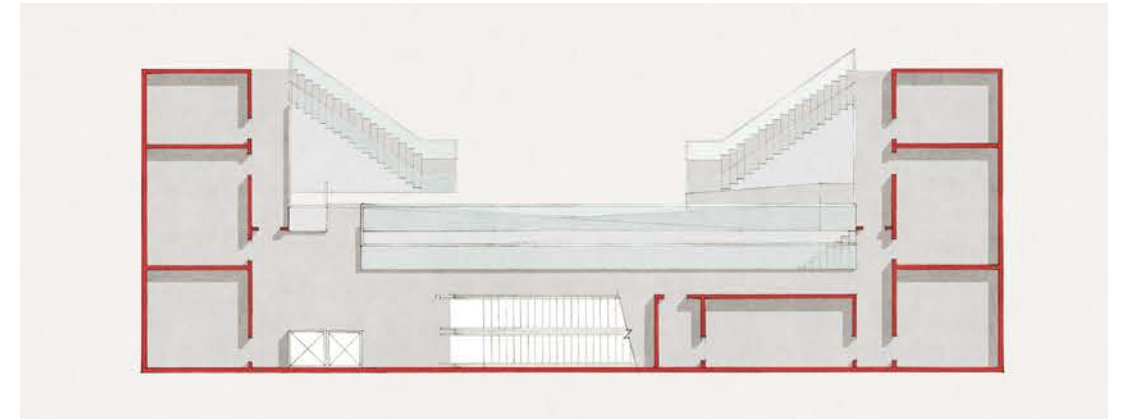
Second floor: security check handicapped access - elevators that bring handicapped passengers down to this floor to use priority lane for security check.

Fourth floor: arrival lobby with baggage claim and higher waiting area for watching guests coming.



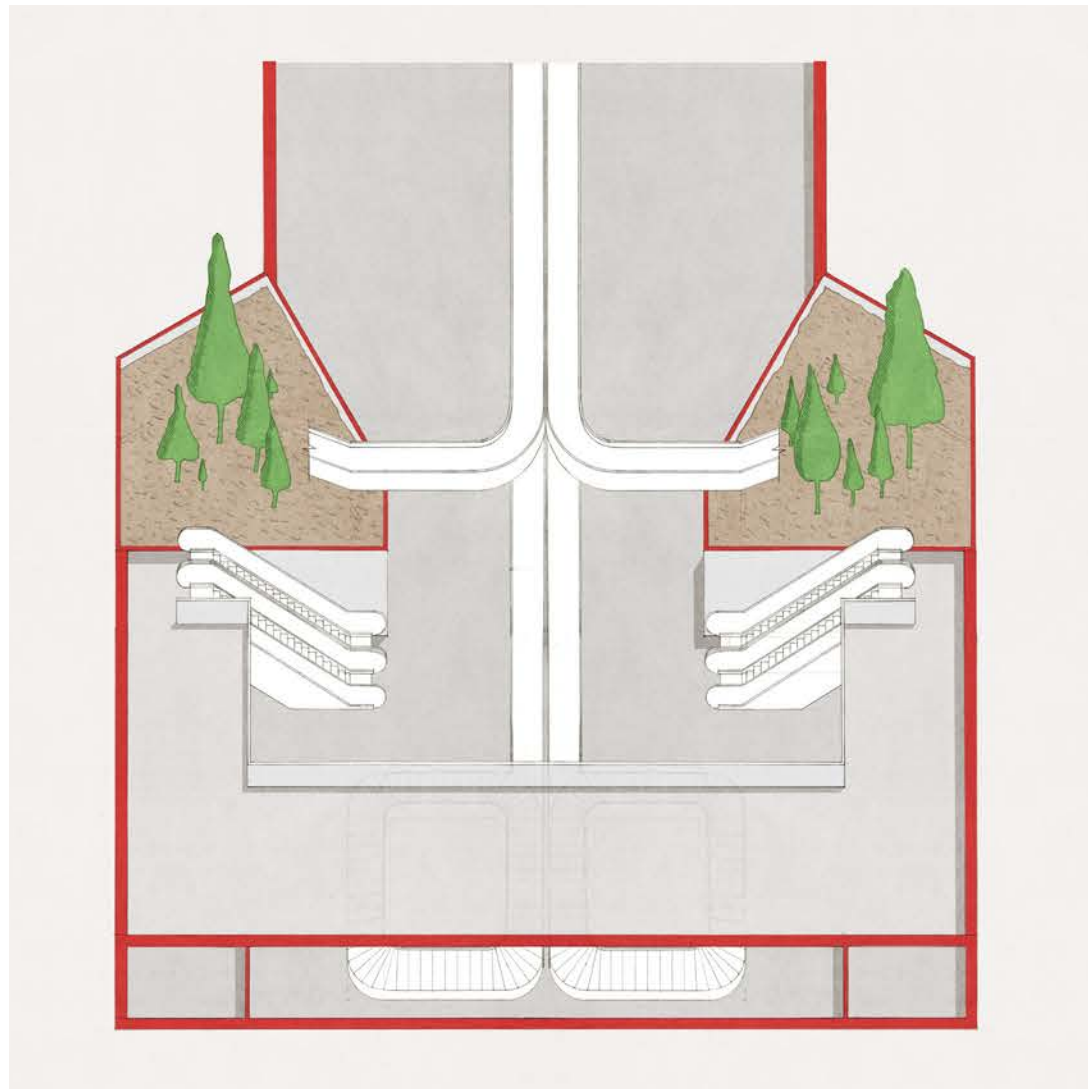
1. Luggage shaft (throughout floors)

2. Third floor plan: departure entrance, passenger/luggage check-in, departure waiting area

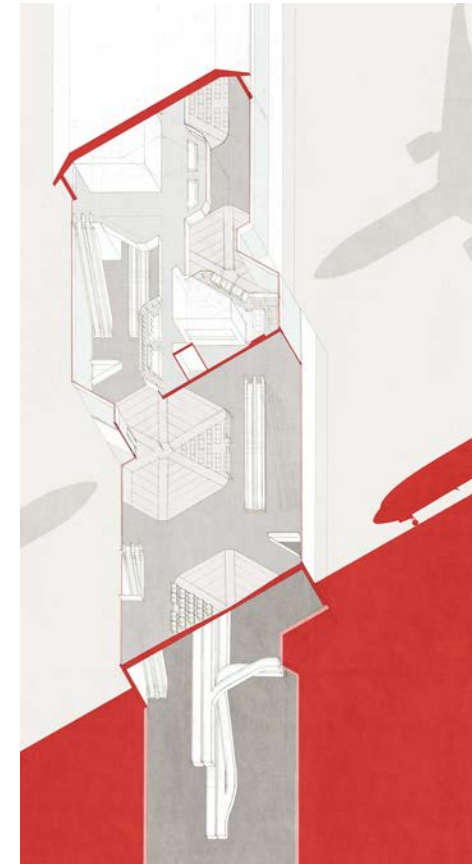


3. Second floor mezzanine plan: security check queuing area

4. Second floor plan: handicapped priority queue, security check lanes



5. First floor plan: luggage claim, arrival waiting, arrival exit



Axonometric representation of the airport scheme over security point.

Level 1: Luggage handling; departure luggage at 7' above floor, arrival luggage at floor level. Those luggages can be seen by passengers walking at two sides of conveyor belts. Arrival passengers walk on this level next to the luggages to get back to the lobby.

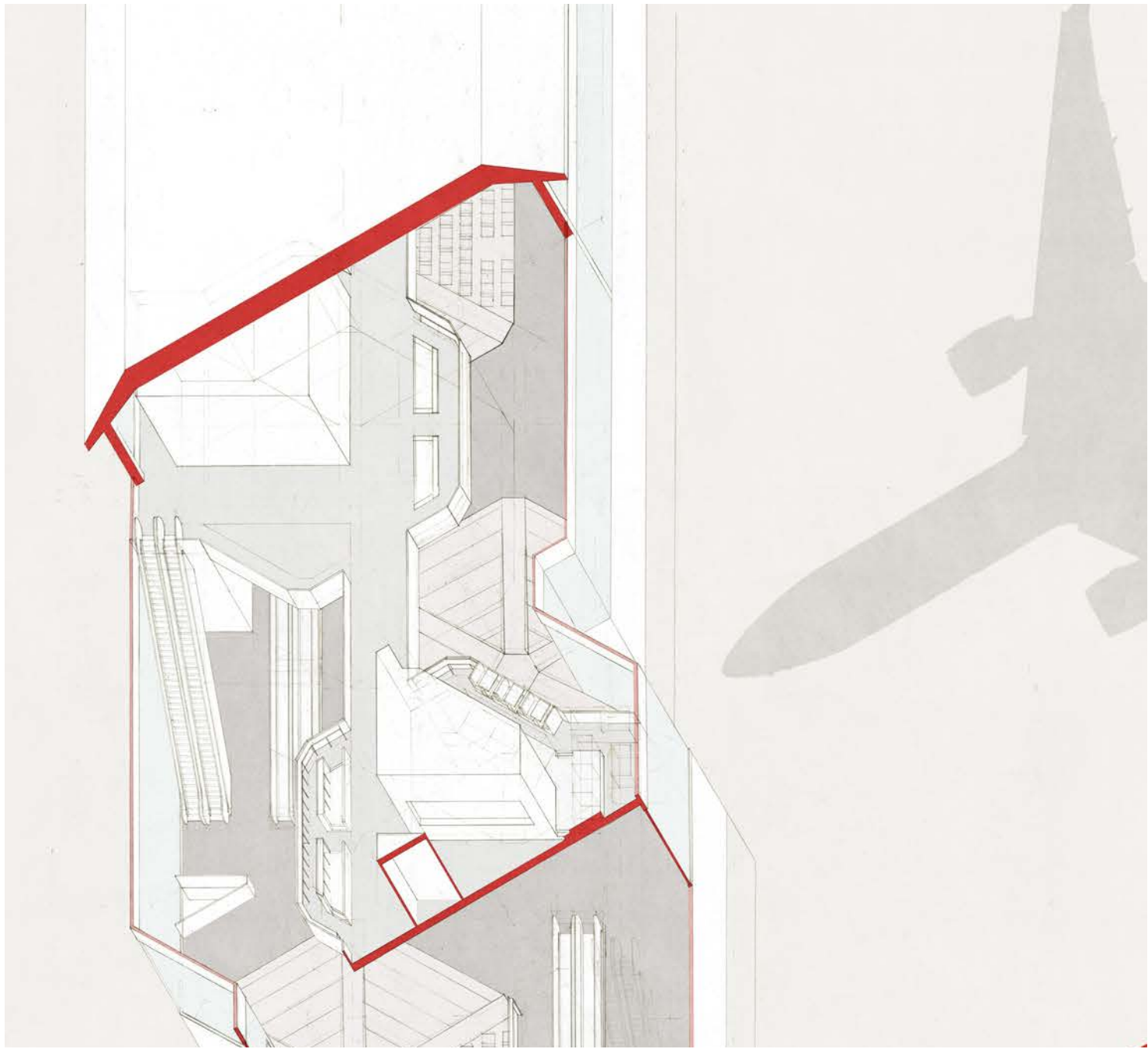
Level 2: Departure gates; designated short-time seating are arranged in radial form facing the gates with a slight slope down to the center. Boarding lanes are situated next to the seating areas with boarding groups assigned. People mover

transport passengers along this level, and escalators bring people to/from higher or lower levels.

Level 3: Departure waiting; passengers are at level 3 when they just finish security check phase. Depending on their waiting time, they can choose to go to their gates and use short-time seats to rest or stay on level 3 to participate in programs like restaurants and bars for a longer duration.

There are apertures on each level, allowing passengers to see through and comprehend the situation of things happening on other levels.

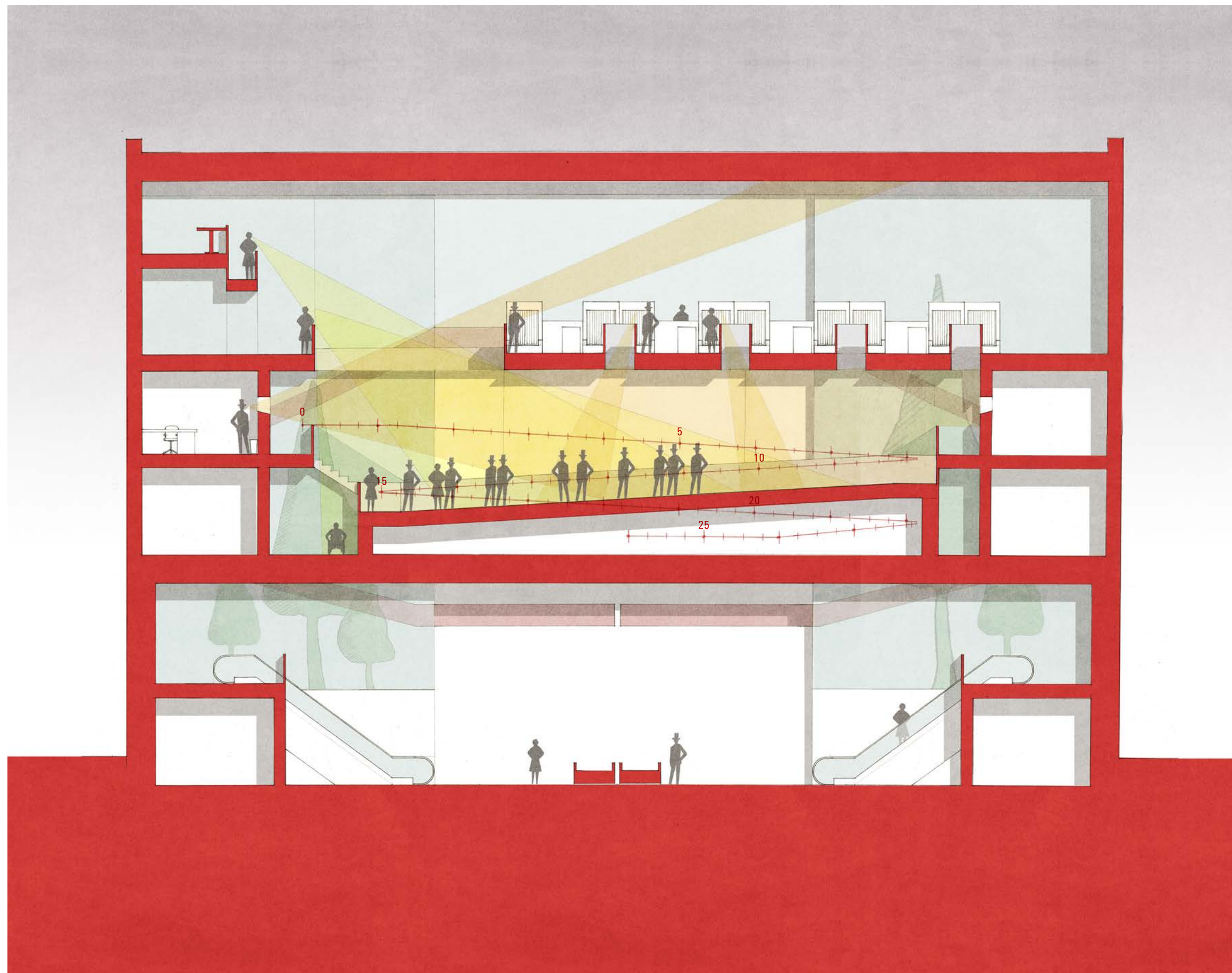




1. Axonometric panel 1: access to the gate, conveyor belt, escalator, landside waiting, restaurant seating, power booth, boarding seating, boarding lanes, luggage loading/unloading



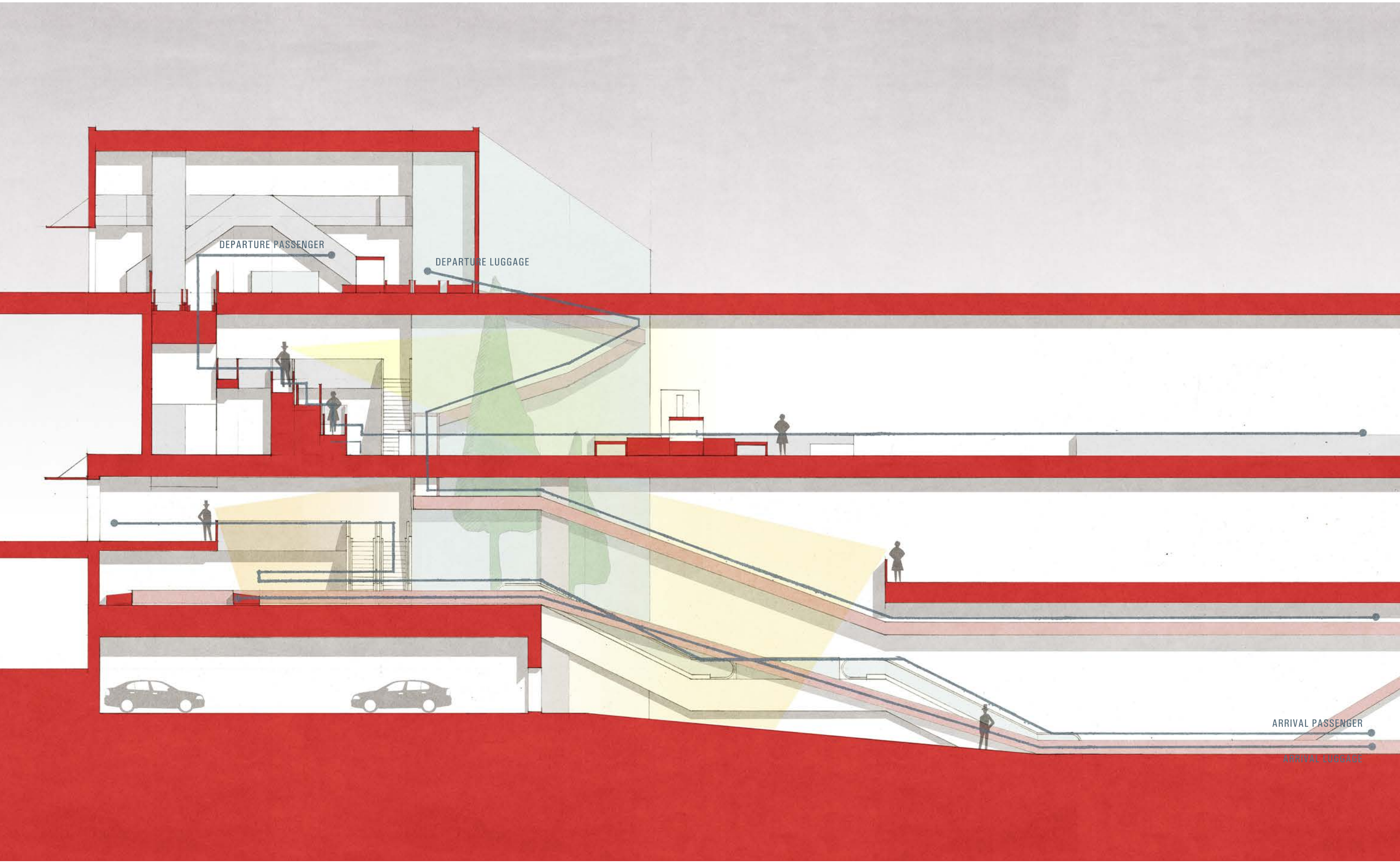
2. Axonometric panel 2



Following spreads:

1. Cross section of the airport building before security point.
2. Longitudinal section of the airport showing the relationship between levels and phases.
3. Section of boarding area showing visual connections between the waiting, boarding and luggage loading phases and in phase change.





DEPARTURE PASSENGER

DEPARTURE LUGGAGE

ARRIVAL PASSENGER

ARRIVAL LUGGAGE



