

# Grid + Ghost

by

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presented to the University of Waterloo  
in fulfilment of the  
thesis requirement for the degree of  
Master of Architecture

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## Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.



## Abstract

The thesis begins with a notion to design a school of architecture in Saskatchewan. The context, at first, appears overwhelmingly basic: an agricultural grid superimposed on a horizontal plain, under an endless sky. This formulaic description cannot capture what it is to experience the place.

Stemming from this archetypal divide between earth and sky, the character of the prairies develops through a series of pairs. Each four-part section begins by setting up a polarity; on one side, a grid, and on the other, a ghost. The intersection of these two elements is illustrated through an interface and a segment of time. With each added layer, the polarities become increasingly entwined. The school of architecture is located, conceptually, in this space of reciprocity.

The physical site is an industrial wasteland near the centre of Saskatoon, bounded on the east and west sides by two sets of train tracks. A timber and masonry warehouse, constructed for the John Deere Plow Company in 1910, is located along the end of the spur line to the east. The school of architecture finds itself within this building. The view down the tracks provides a glimpse of the prairie fields; the nondescript site itself alludes to this Deleuzian smooth space beyond the city limits. Even as it precisely situates and contains itself in this physical urban context, the school of architecture internalizes the dream of the prairie landscape. It is an educational institution and an incubator for the architectural imagination.



## Acknowledgements

Early in the thesis, I came across the poetic work of Lorna Crozier, which overwhelmed me with a sense of longing for home. I knew I had found the words I had been trying to come up with on my own. The following work was considerably influenced by the images conjured up by the “First Causes” in her book, *Small beneath the Sky*.

I had the privilege to work with a committee of professors that encouraged and supported me through my most rewarding work. Rick Haldenby, my thesis supervisor, had a constant and contagious enthusiasm for this project that motivated me to keep pushing forward. Dereck Revington, who was there from the conception of Grid and Ghost, challenged me to carry these themes through the thesis. My repeated brainstorming meetings with Donald McKay directed my design decisions and focused my thoughts. The prairie-coloured reflections of Melana Janzen were a meaningful addition to this committee. As she said following the defense, the prairie landscape never leaves you.

There were a number of people in Saskatoon who facilitated my research for this project. Ken Dahl at the Saskatoon City Archives helped me find all the historic maps I needed. The staff at the Local History Room at the Saskatoon Public Library assisted me in finding relevant historical images and texts. Dale Petrun, Andrew Wallace, Doug Parsons and Rob Tomiyama shared their knowledge of the John Deere building with me during tours through the building. The City of Saskatoon provided digital drawings of the building and GIS data of the city.

I have relied heavily on my friends and family for support throughout this process. My parents were my voice of reason when I became overwhelmed and my unwavering cheering section. My friends were both a necessary distraction from my work and a productive critic of it. Grant’s role in my life cycled between calming my emotions, motivating me to continue on, and becoming whatever else I needed but couldn’t articulate, which changed more and more frequently as I came closer to completing this thesis.

Thank you, to everyone who supported, inspired and challenged me throughout this process. I could not have done it alone.



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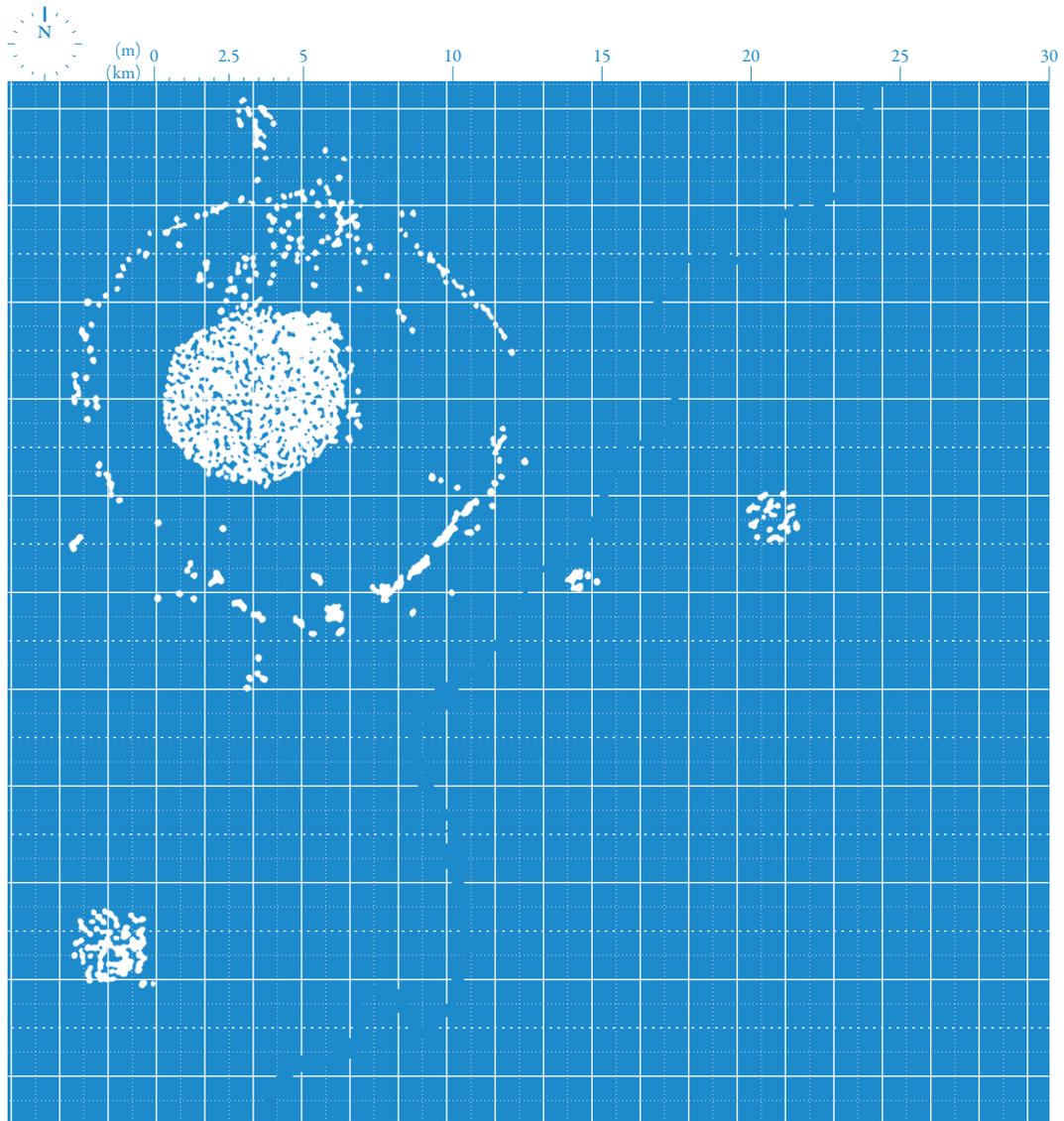


In the beginning First Man emerged like a plant from the Great Plains earth. At first only his head was visible, and he looked around at the nothingness that surrounded him. There were not yet any rivers, mountains, grass, or animals. Gradually First Man pulled himself up out of the soil until he stood on the soft earth. It was the sun that gave solity to the earth and strength to the man.

Leeming. "Sioux," 244.

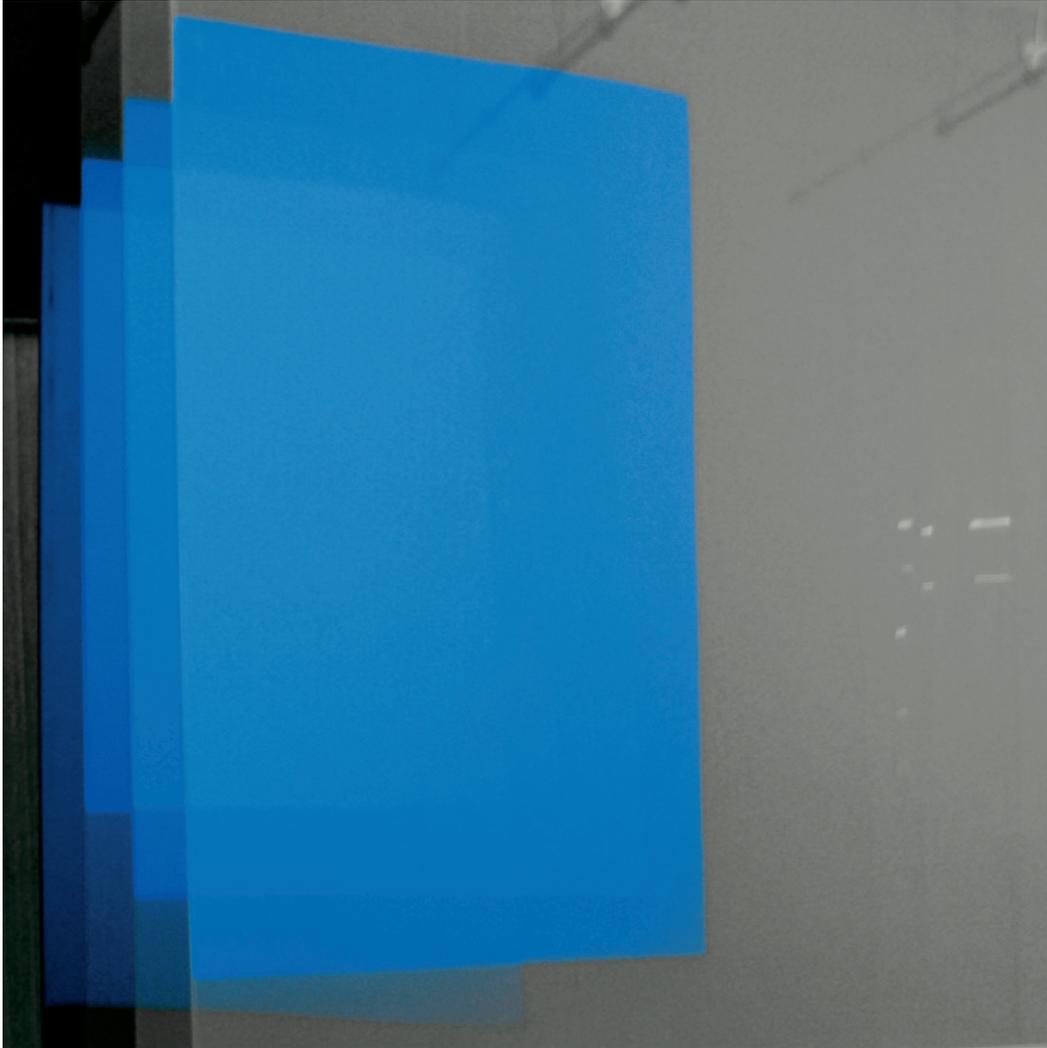


One



1. **Describing the Earth, 1:250/1:250 000**

The standardized quarter-section grid (1:250 000) is abstracted over the land, broken only by the river. The Tipperary Creek Medicine Wheel (1:250) is located along the west bank of the river in Wanuskewin Heritage Park, just north of Saskatoon.



2. Neufeld and Wong, **Inter** (M1 Studio, School of Architecture, University of Waterloo, 2011).  
The overlaid reflections of the projected blue square modify the perceived space of the installation;  
space expands horizontally in an infinite virtual depth.

## Earth

The relentless grid that extends over the prairie landscape measures out equal sections of land, challenging the boundlessness of the horizontal plains.<sup>1</sup> Its only purpose was to expedite colonization.

It took three hundred years, following its sacking and liberation early in the 5th century BCE, to rebuild the Greek city of Miletus. The new orthogonal plan reconstructed the existing axes of the old city and framed the deity-strewn landscape through its linear streets.<sup>2</sup> The design was not a political device to control citizens. Neither was it the result of modernist functionalism. The purpose of the grid was to connect the citizens with nature, a word synonymous with spirit in the Greek mind.<sup>3</sup>

Wherever the number four is used as an organizing principle of the world, as it is in the Miletus gridiron, it is portraying the earth as an orderly, stable and solid object. The *cardo* and *decumanus* of Rome were drawn at right angles, following the course of the sun and the axis of the sky.<sup>4</sup> This resulted quite literally in *Roma quadrata*, or squared Rome, which was “immovable in and at harmony with the universe at whose centre it was placed.”<sup>5</sup> The medicine wheel of the First Nations people of the prairies is a similar diagram of the earth. It contains the four directions in a circle; each direction corresponds to a colour, an animal and a quality.<sup>6</sup> The world extends out in the four directions from a central point,<sup>7</sup> a point which moves as the people move.

Though it had no conscious regard for the spirit of the landscape, the prairie grid inherently recalls the symbolism attached to the number four. Each intersection, like a street in Miletus, directs your eye toward the horizon. The axes, like those of the medicine wheel, repeat at equal intervals in all directions. Wherever you stand, you are in the centre of an ordered world.

## Sky

The elusive prairie sky hovers over you. You can feel its weight on your back, but it withdraws as you turn. It presses down on you with light, saturating you with its knowledge,<sup>1</sup> and then drifts away with your thoughts, receding into a clear blue of unknowable depths, a blue of contemplation and introspection.<sup>2</sup> Defiant clouds march across the sky, heading east. You project figures into them, as if gazing at a reel of ever-transforming Rohrschach blots.<sup>3</sup> Minutes stretch into hours; an afternoon passes in seconds. Under the prairie sky, it is as effortless to dream in the day as in the night.

Calm or restless, the sky follows your every step. It touches you with loneliness. It humbles your tongue. Nothing is taller, more open. It makes you fall in love with weather, with nimbus and feather and hollow bone. Under its blue gaze, you mark the smallest thing: a lichen scab on stone, thin legs of a crab spider on the petal of a rose, a snowdrift on the beak of a chickadee. Though you lower your head, your prayers go upwards. Imagine all the praise and fear and doubt the sky must hold.

*Crozier, Small Beneath the Sky, 59.*

## Horizon

Earth is floating on the waters like a big island, hanging from four rawhide ropes fastened at the top of the sacred four directions. The ropes are tied to the ceiling of the sky, which is made of hard rock crystal. When the ropes break, this world will come tumbling down, and all living things will fall with it and die. Then everything will be as if the earth had never existed, for water will cover it.

Erdos and Ortiz, "Earth Making," 105.

The unobstructed horizon has an amplified presence on the prairies. The horizon, forever receding, symbolizes our earthly limits as well as the promise of possibility.<sup>1</sup> This archetypal dividing line establishes a duality between the earth and the sky. The strong sense of the horizontal in this landscape generates a yearning for the vertical. It is the connecting vertical line that makes this pairing fertile.<sup>2</sup>

The three additional directions implied in the medicine wheel – Father Sky above, Mother Earth below, and the sacred fire at the centre – acknowledge the verticality present in the physical world and express a desire for a corresponding verticality in the spiritual world.<sup>3</sup> The rawhide ropes that fasten the stable, solid and harmonious earth to the eternal sky are a manifestation of this desire in myth. The ropes are indicative of "the desire to ascend."<sup>4</sup> Equally, this precarious connection represents the unpredictable and unforgiving fates. Without warning, the earth could plunge into the water – water both cleansing like the flood and fertile like the primordial waters.

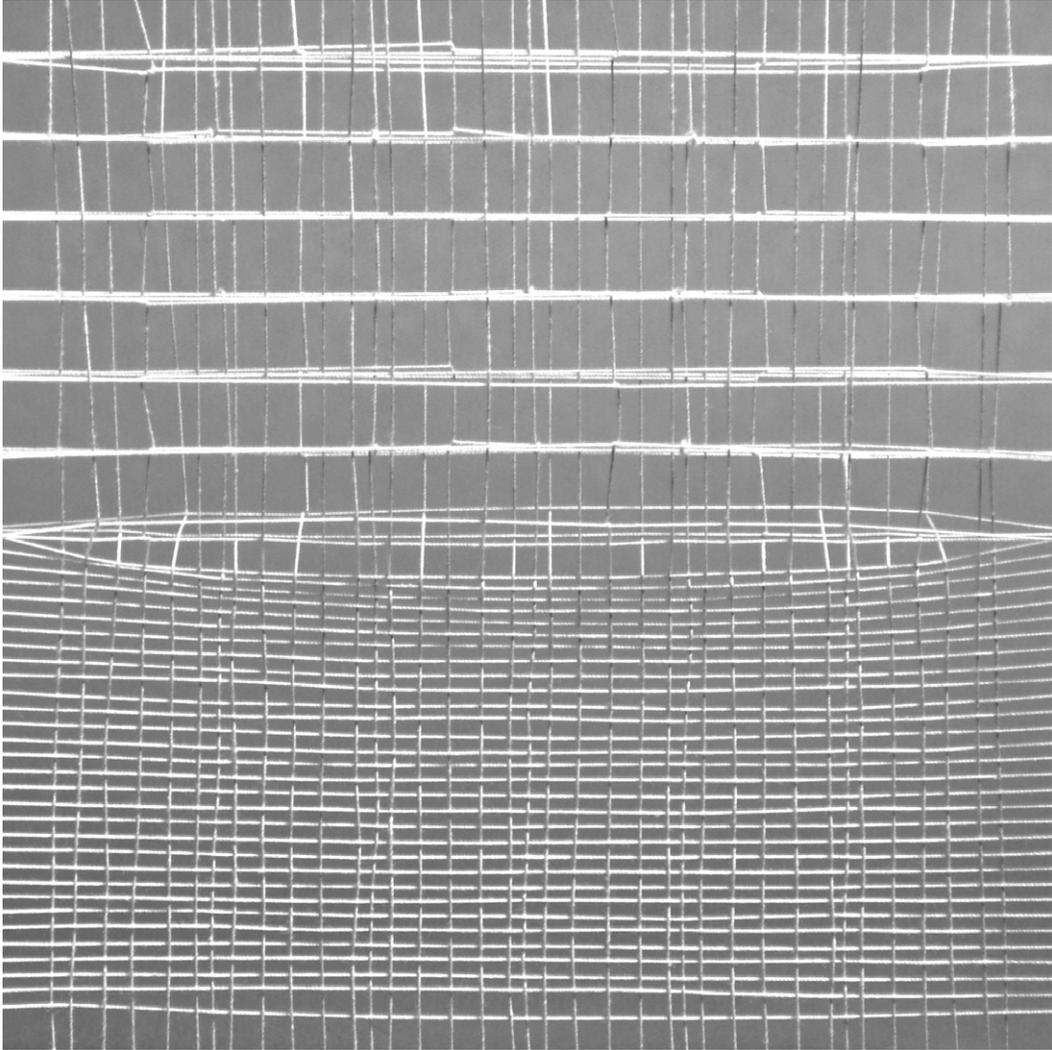
The relationship between the earth and the sky can be read where they meet at the horizon. Billowing clouds reach up like mountains; a blizzard blurs the division, and then leaves a fresh coat of snow, drawing a crisp line against a blue winter sky; at dusk, the sky and earth darken, gradually merging in the blackness and then separating at dawn.



3. **House of the Captive Unconscious** (M1 Studio, School of Architecture, University of Waterloo, 2011). The combination of the grid and the distorted cube reveals qualities that are not present as separate objects. The reflections are layered and pulled, giving substance to the transparent cube and movement to the grid.

A solitary tree marks its comings and goings like a pole sunk in the shore of the ocean to measure the tides. Here, light seems like another form of water, as clear but thinner, and it cannot be contained. When you touch it, it resists a little and leaves something like dampness on your skin. You feel it the way you feel a dog's tongue lick your cheek in the early morning. After an hour or two of walking, you are soaked in brightness. When you shake your head and shoulders, you see the spray. If you stay too long in the open, you could drown, its currents carrying you to its source, your body bobbing, then going under, your lungs full of lustre. Nowhere else in your travels will you see light so palpable and fierce. It is too huge for dreams, too persistent for solitude.

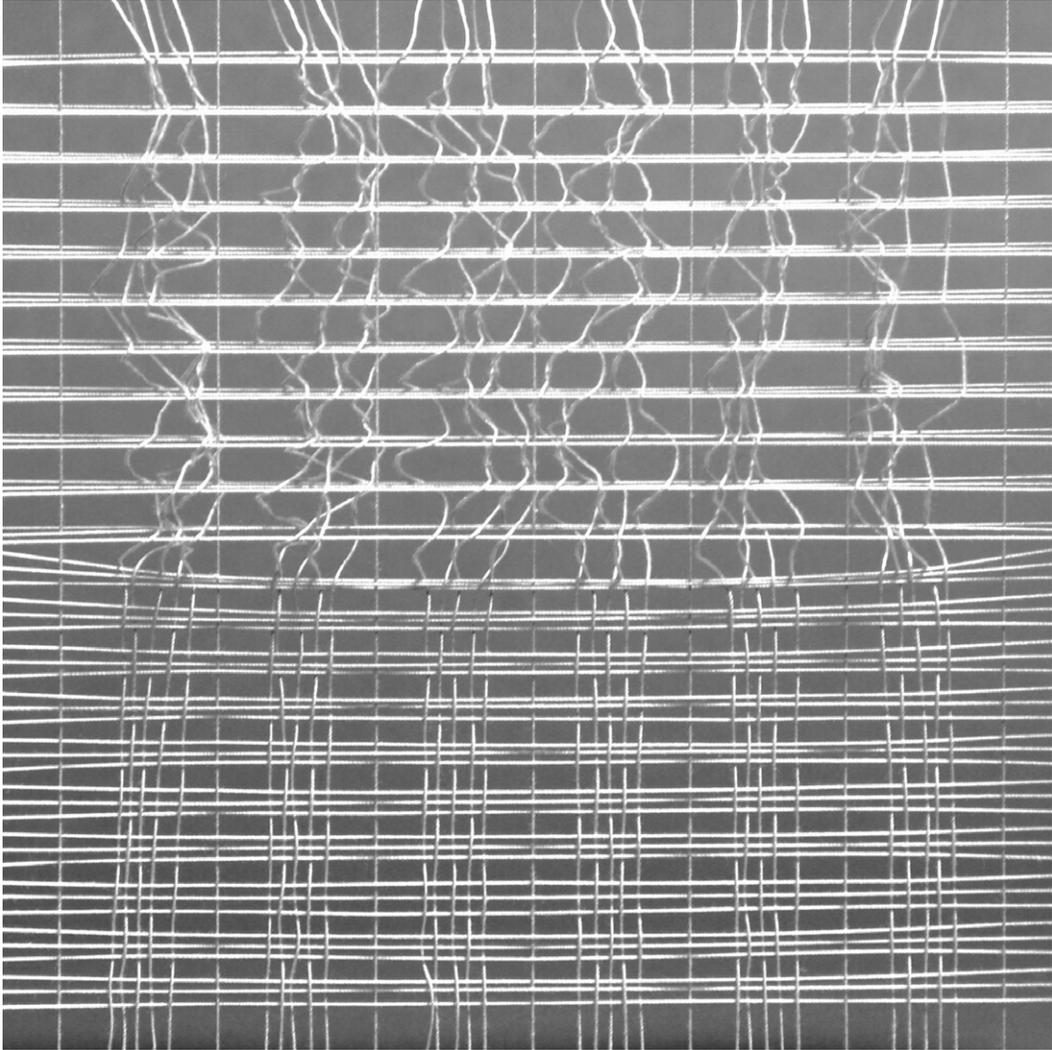
Crozier, *Small Beneath the Sky*, 1.



4. "Blue" from *The Horizon[s]* (Inner Studio, School of Architecture, University of Waterloo, 2011).

In such clarity of light there has to be its opposite. Something that smears, stains, drops a shroud and forms a film across the eye. When the wind is up, the season is dry, the world turns upside down: the sky becomes the earth, particular and grey, and you breathe it in. You can get lost in dust as in a blizzard.

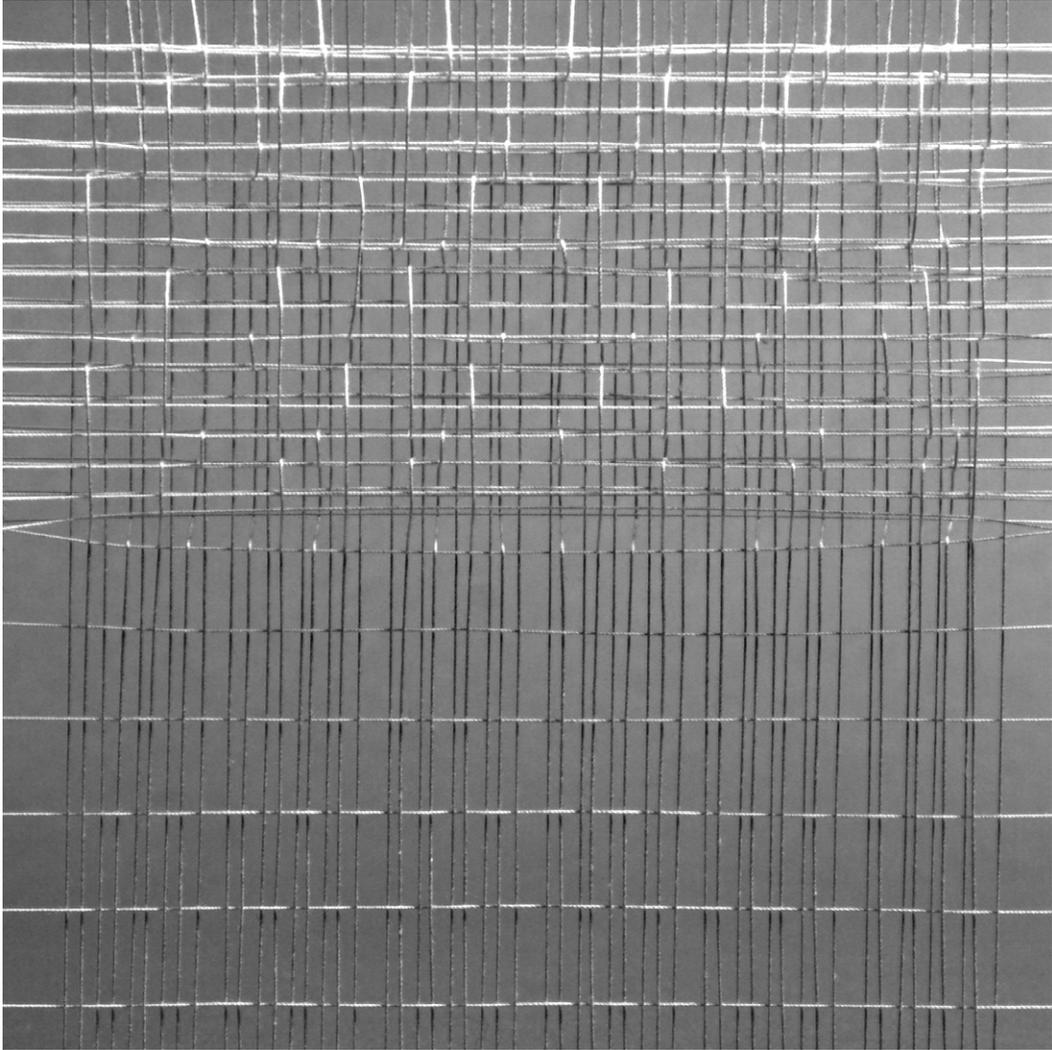
Crozier, *Small Beneath the Sky*, 2.



5. "Grey" from The Horizon[s] (Inner Studio, School of Architecture, University of Waterloo, 2011).

Rain takes any mood you want to give it: sadness or grief or exaltation or the longing for a lover far from home. For all its noise, it has never had its own language. It sounds only when it strikes, a mynah bird calling its notes from tin Quonsets, wooden shingles on a shed, wolf-willow leaves, the hoods of slickers, car roofs, the glass of skyscrapers, the canvas of a tent, water running or standing still. For centuries on the plains, it has made the people dance. It has made them stamp the ground like bison, lift their faces to the sky and build fires they call rain down to douse.

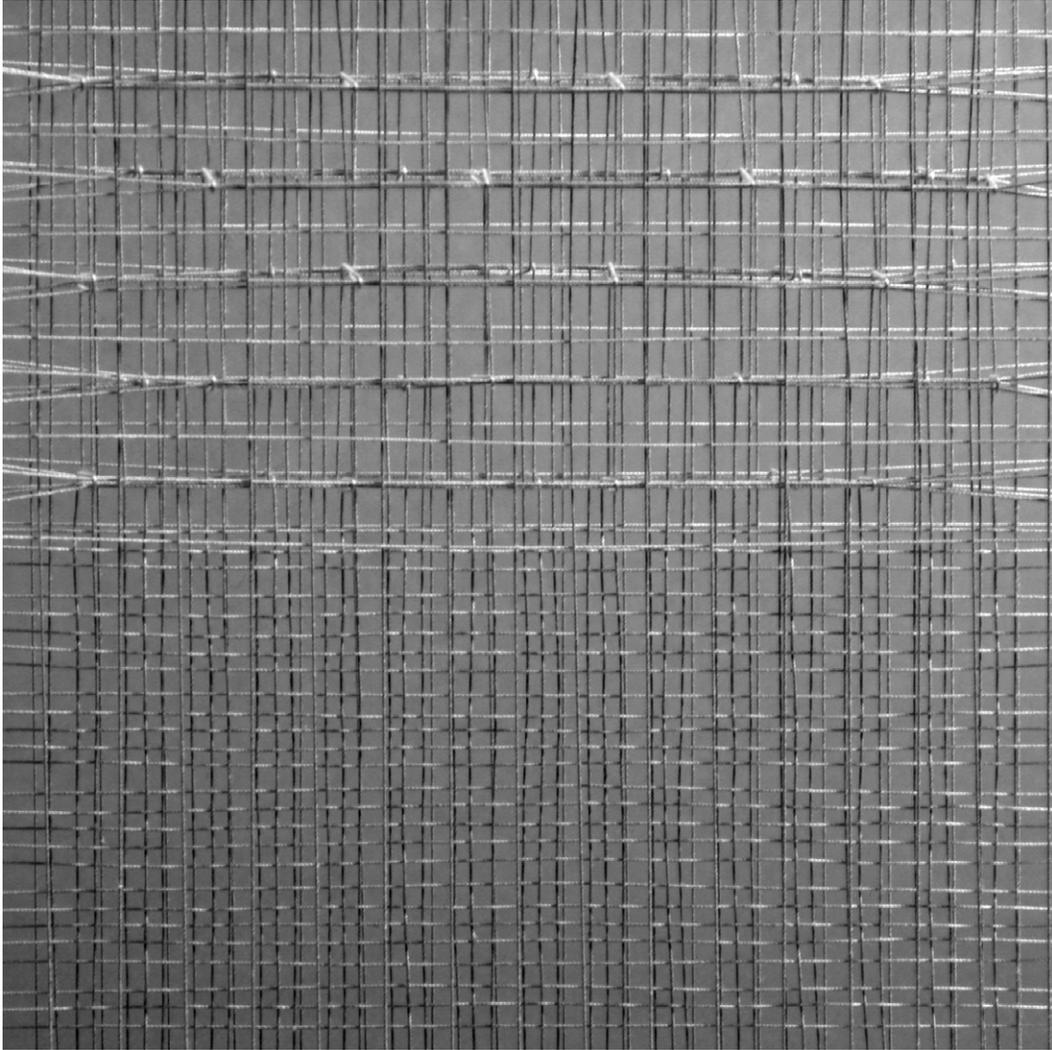
Crozier, *Small Beneath the Sky*, 57.



6. "Green" from The Horizon[s] (Inner Studio, School of Architecture, University of Waterloo, 2011).

Snow falls slowly in memory. It is tentativeness given form and temperature, seeming again and again to hesitate, not knowing what lies below, whether the surface will be slippery or smooth, level or steep, a hillside, a field of purple clover, an open mouth. The snowflakes fall and lift, then fall again, the first ones melting as they touch the ground. Those that follow retain their shapes, remain as they were when they feathered the sky. One by one they accumulate, form a density of stars, a thousand nameless constellations, none of them bruising or breaking, not a word, not a sigh. Their whole purpose is to fall, to settle down.

Crozier, *Small Beneath the Sky*, 58.



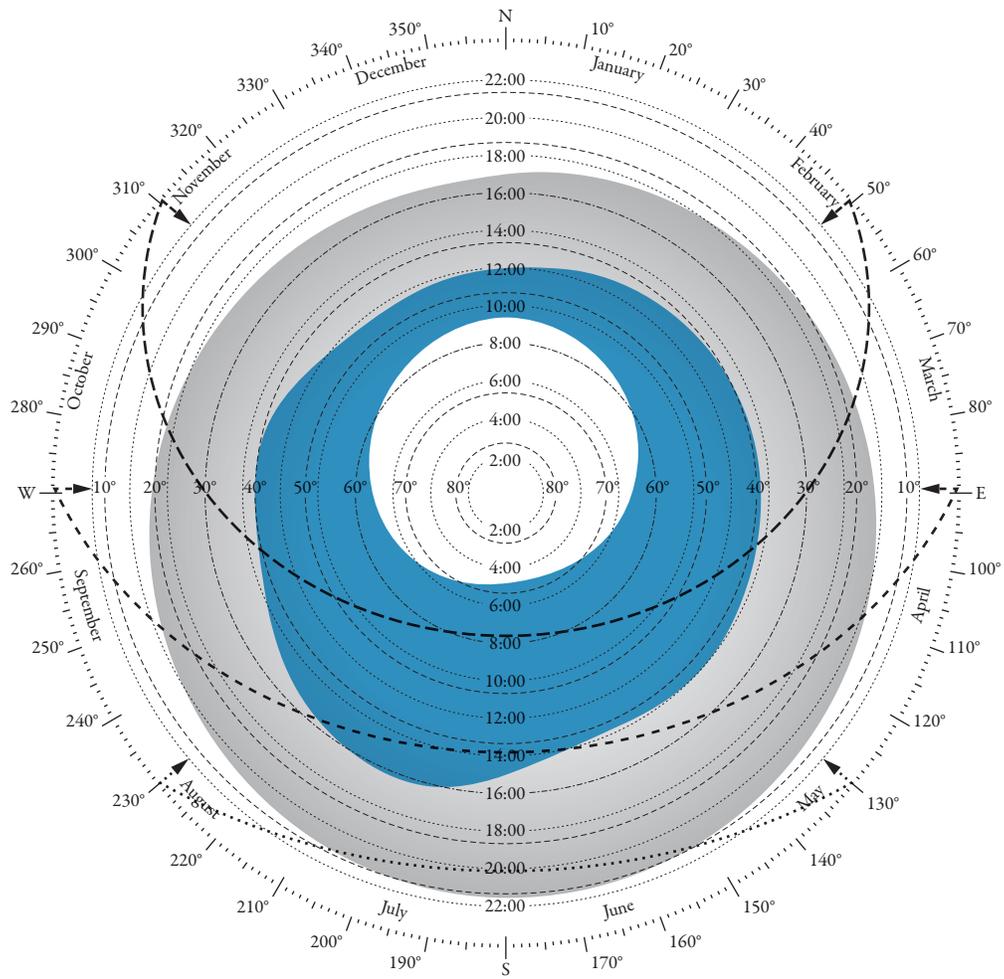
7. "White" from The Horizon[s] (Inner Studio, School of Architecture, University of Waterloo, 2011).

## Diurnal Cycle

The sun measures time against the earth. Each night, it crosses over the western horizon to the other half of the sky, leaving the prairies in darkness. Each morning, the sun emerges from behind the eastern horizon.

The influential sun plays a role in many First Nations mythologies. The Tsimshian sun is a burning wood mask worn by Walks-All-Over-the-Sky, the second son of the chief in the sky.<sup>1</sup> The “beautiful, wonder-working leggings” of the Cheyenne sun set grass fires with their intense heat, gathering all of the game for the hunters.<sup>2</sup> The Cherokee sun had to be pushed back four times before it was just the right temperature.<sup>3</sup> In a separate myth, Grandmother Spider stole the Cherokee sun from the greedy people on the other side of the world, following Possum and Buzzard’s unsuccessful attempts.<sup>4</sup> The Zuni sun was stolen by Eagle and Coyote, who brought it back from the west in a box. Eagle warned Coyote, who was unaware that they had also stolen the moon, not to open the box. Naturally, curiosity got the better of Coyote. He waited until he was alone and opened the lid. The moon escaped and changed the season to winter. As he was chasing after the moon, the sun drifted far away and the world became colder.<sup>5</sup> These cultures clearly recognize the power of the sun. They also place significance on the animals in the stories, who have the ability to alter their surroundings, either intentionally or unintentionally. The symbolism attached to each character reveals the ideology of the culture. The wise spider prevails over the possum and the buzzard; the coyote’s mistake subjects everyone to the cold winter year after year.

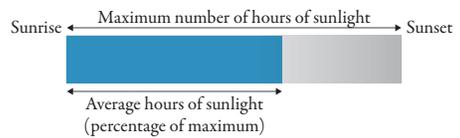
The cycle of day and night is regulated by the cycle of seasons. Like a steady breath, the day expands until the compressed darkness reverses the cycle and begins to encroach on the elongated days of the summer. In winter, the sky is dominated by darkness and everything is hushed under a layer of snow. It is the ideal time for dreaming. Some First Nations believe that the membrane between the real world and the spirit world is the thinnest on winter solstice.<sup>6</sup>



Sun Angle:

- Summer Solstice    - - - - -
- Equinox            - · - · - ·
- Winter Solstice    · · · · ·

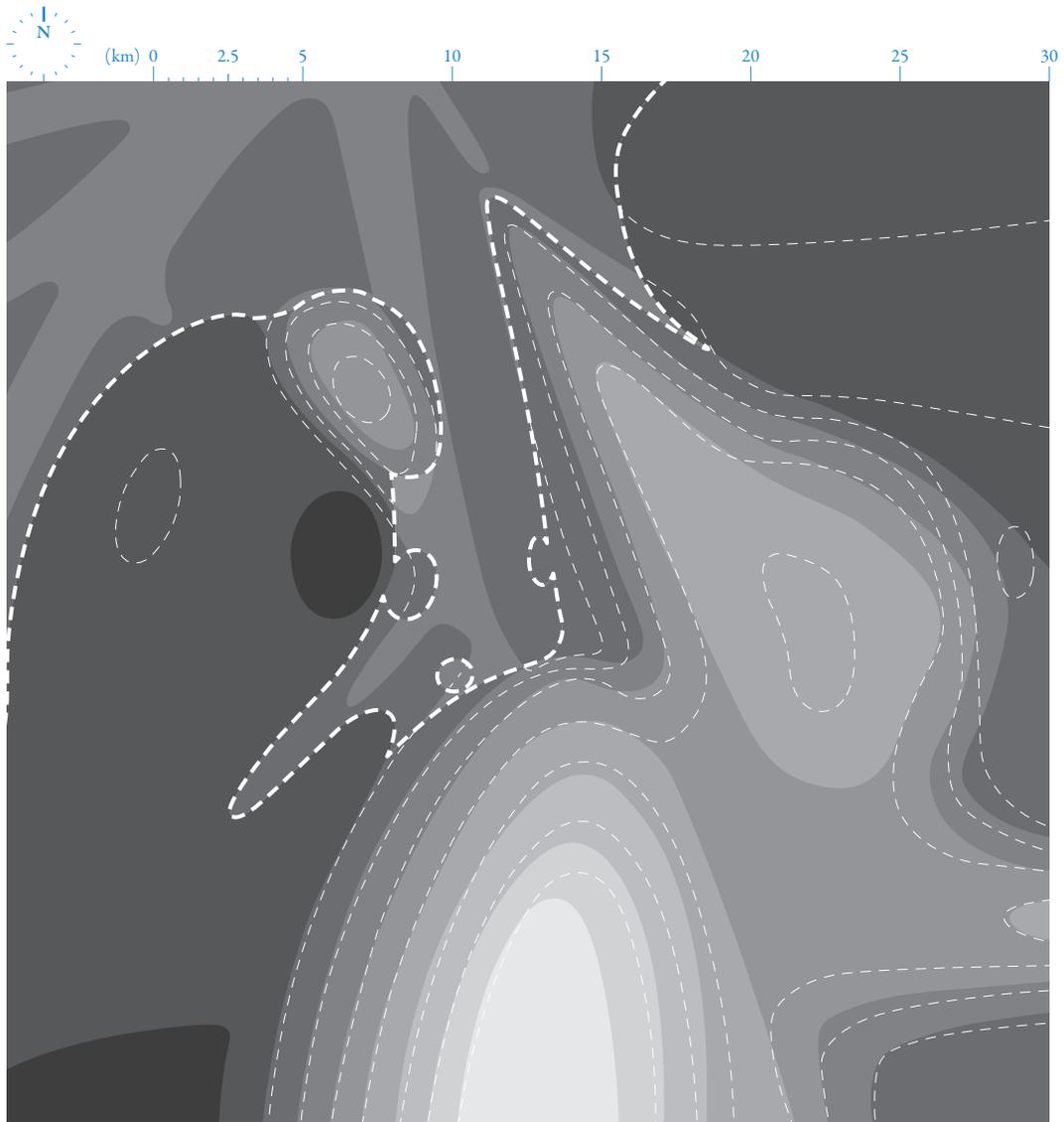
Sunshine (hours/day):



## 8. Sunlight



Two



Contours (m):

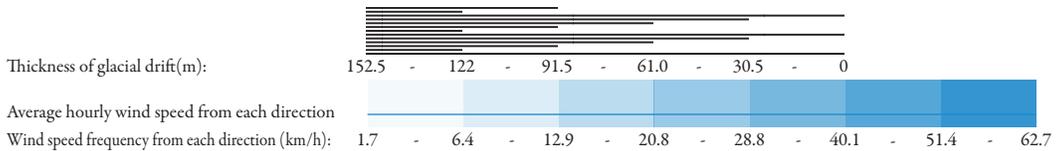
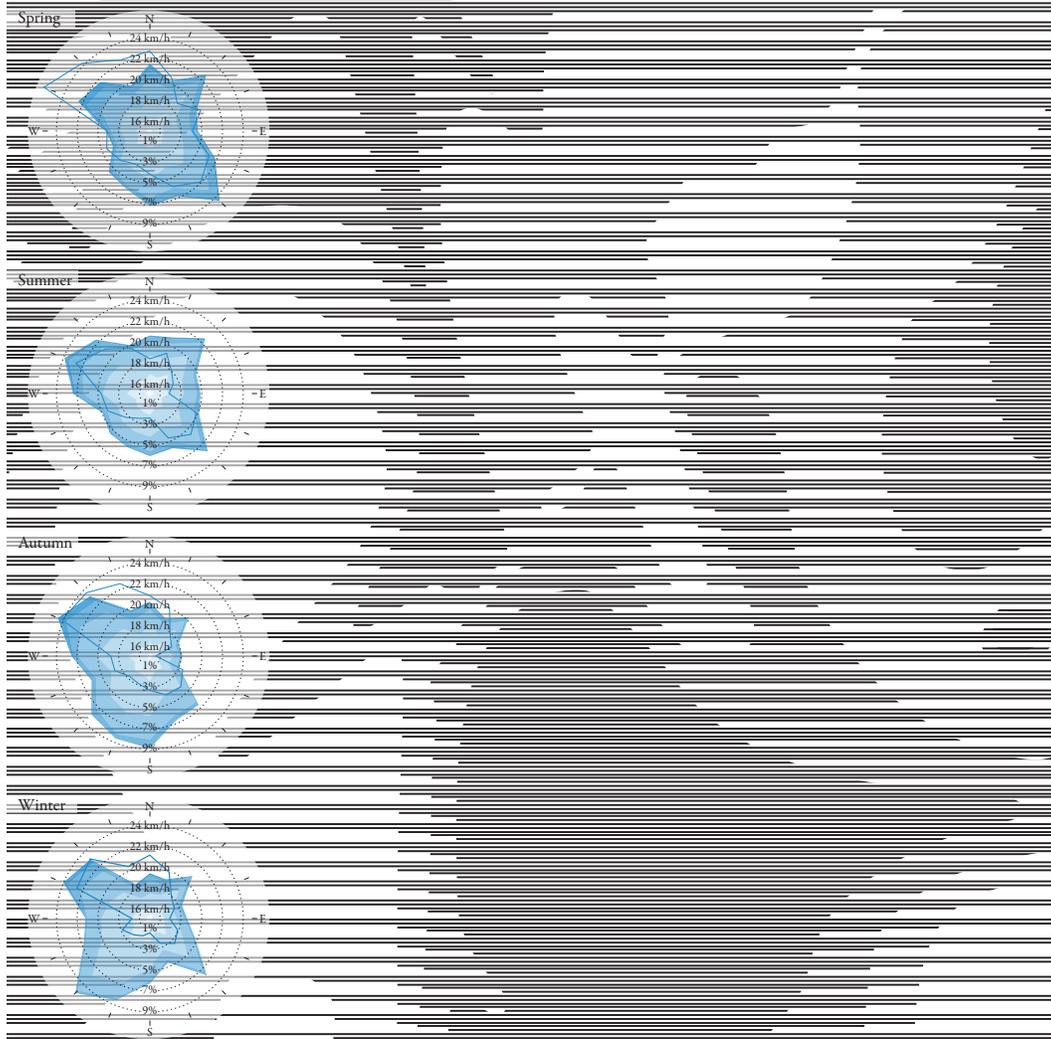
274.5 213.5 244.0 305.0 335.5 366.0 396.5 427.0 457.5

Extent of Oldman Formation  
Lea Park Formation (below)



9. **Formation of the Landscape: Bedrock, 1:250 000**  
Layers of sedimentary rock form the bedrock beneath the Saskatchewan prairies.





10. Formation of the Landscape: Glacial Drift and Wind, 1:250 000

The glacial deposits tend to have a reciprocal relationship to the elevation of the rock below; they are deepest in the hollows of the bedrock. The wind is most influential in the spring and autumn, when the fields are not protected by snow or vegetation.



11. Little Rock's War Shield

*The shield illustrates a vision of spiritual power residing in the dome of the sky. A central Thunderbird, outlined in red, is surrounded by four additional Thunderers, one for each of the four cardinal directions... The horizon of the earth, punctuated by four sacred mountains, frames the sky...*

## Geomorphology

This is how the landscape was formed.

During the Cretaceous period, a significant increase in sea level submerged the low-lying lands of North America's interior beneath a shallow, saline waterway. Over millions of years, sedimentary particles settled on that sprawling sea bed. Layers of shale and sandstone softened the features of these lands, resuming a process that had begun hundreds of millions of years previous. The first phase of sedimentation had formed a blanket of carbonate rock, laced with mineral deposits, over the Precambrian crystalline surface, thousands of metres below what would become the Saskatchewan prairies. In time, the sea level lowered to uncover the second phase. The wedge-shaped terrain descended from the southwest to the northeast until it bore its crystalline rock basement.<sup>1</sup>

When the succession of continental glaciers raked over this landscape, leaving layers of well-groomed glacial till in their wakes, they matched the slope of the sedimentary bedrock below.<sup>2</sup> Layer after layer, glacial activity sketched faint markings onto the surface, masked them under a clean sheet of till, and drew revisions on the fresh plane. The Laurentide Ice Sheet, in the last iteration of this cycle, shaped the subtle features of the land with precision. Its steady retreat revealed slight depressions in the earth, a negative image of the glacier's weight. While the drainage route to the northeast was still ice-dammed, its meltwater filled the large basins.<sup>3</sup> The future landlocked province was flooded, once again. The sediment from these proglacial lakes coated the homogeneous glacial till with fine, fertile soil.<sup>4</sup> When the glacier retreated further, the water was released. The sudden surge of water carved broad valleys into the soft, freshly deposited material.<sup>5</sup> It excavated buried channels and traced along the margin of the ice sheet, using these elements to guide its path.<sup>6</sup> Reaching depths of one hundred metres in places, the valleys provided relief on the otherwise horizontal plains.<sup>7</sup> With the weight of the water and ice gone, the ground where the depressions had been restored its even surface, as if finally allowed to inhale.<sup>8</sup>

Gazing out into this landscape, it seems only to exist in the present. The immense unvarying plane conceals the history of its formation. It waits, denying the deliberate and complex process that shaped its pristine form and smooth surface. The transformation still persists, though the method and the time-scale have shifted. Now the wind shapes the land. It blows from the northwest, with nothing in its path to slow it down or redirect it.<sup>9</sup> Exposed particles erode away and relocate to the smallest cracks in the surface, further leveling the plane. The prairie landscape perpetually refines its monotony.

## Earth-Diver Myth

When everything was water, Iktome sent various animals to find earth below the primeval sea. Only the muskrat succeeded; he floated up dead but there was earth in his claws, and out of that earth the creator made land.

Leeming, "Assiniboine," 50-51.

The muskrat had reached the bottom of the waters after all. Now the turtle volunteered his back and his life as a surface for the ball of earth, and the animals called on Kitchi-Manitou for help. Help came in the form of winds from the Four Directions, winds that caused the little ball of earth to grow gradually into an island on the now dead turtle's back.

Leeming, "Anishinabe," 40.

He then said there would be as many winter months as there were hairs in his fur robe. Only the frog dared point out to Iktome that this would be too many months of winter and suggested that seven cold months would be sufficient. When he continued to argue his point, Iktome killed him, but even after death he signified seven months with his toes, and the creator-trickster gave in to the frog's idea.

Leeming, "Assiniboine," 51.

In the earth-diver myth, land emerges from the depths of the sea and is formed by the four winds. The creator provides all the necessary elements, but creation is only possible with the sacrifice of the muskrat and turtle. Slight variations in the plot and characters personalize the story to each culture's physical surroundings and set of beliefs. The creator-trickster of the Assiniboine people, Iktome, is evidence of the culture's awareness of a tie between creation and destruction. Their version of the earth-diver myth also explains the existence of winter.

## Primordial Waters

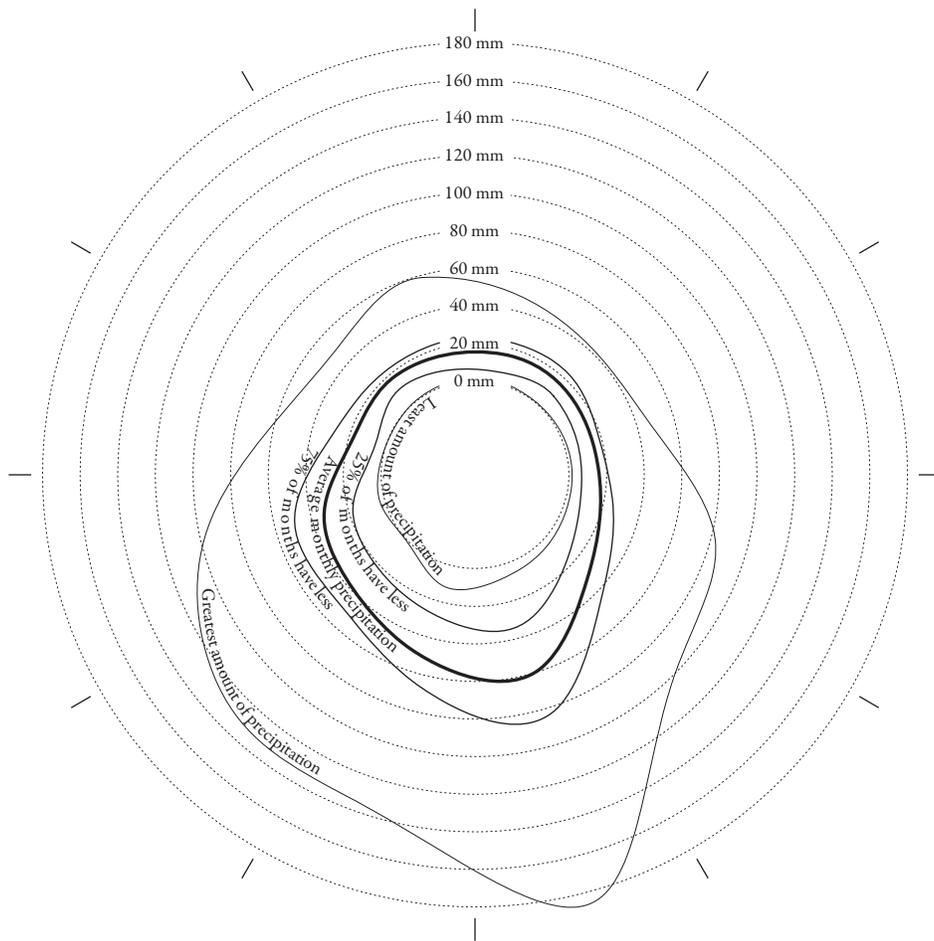
Water is rich with meaning.

In vast bodies, the dark water seems alive as it patiently breathes with the tide; its vigorous currents are obscured in the depths. On the dusty landscape, surface water is sparse. It concentrates life around its shores. Occasionally, a heavy rain fall washes the dust from the air and revives the land. The excess water lingers on the flat surface and temporarily supplements the thin network of rivers, creeks and lakes. This is the turbulent water of the earth-diver myth from which the earth emerged. This is the fertile water that deposited, compressed, scraped and smoothed each layer of the prairies.

The primordial waters are both chaotic and fertile. They are a symbol of latent creation, waiting to take form.<sup>1</sup> The prairie, born out of the primordial waters, inherits this symbolism. The wind-swept fields imitate the sea that once existed there. Below, the rich soil holds the potential for life.

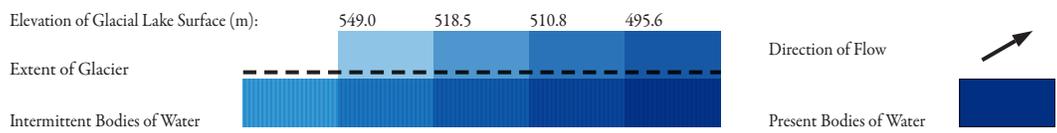
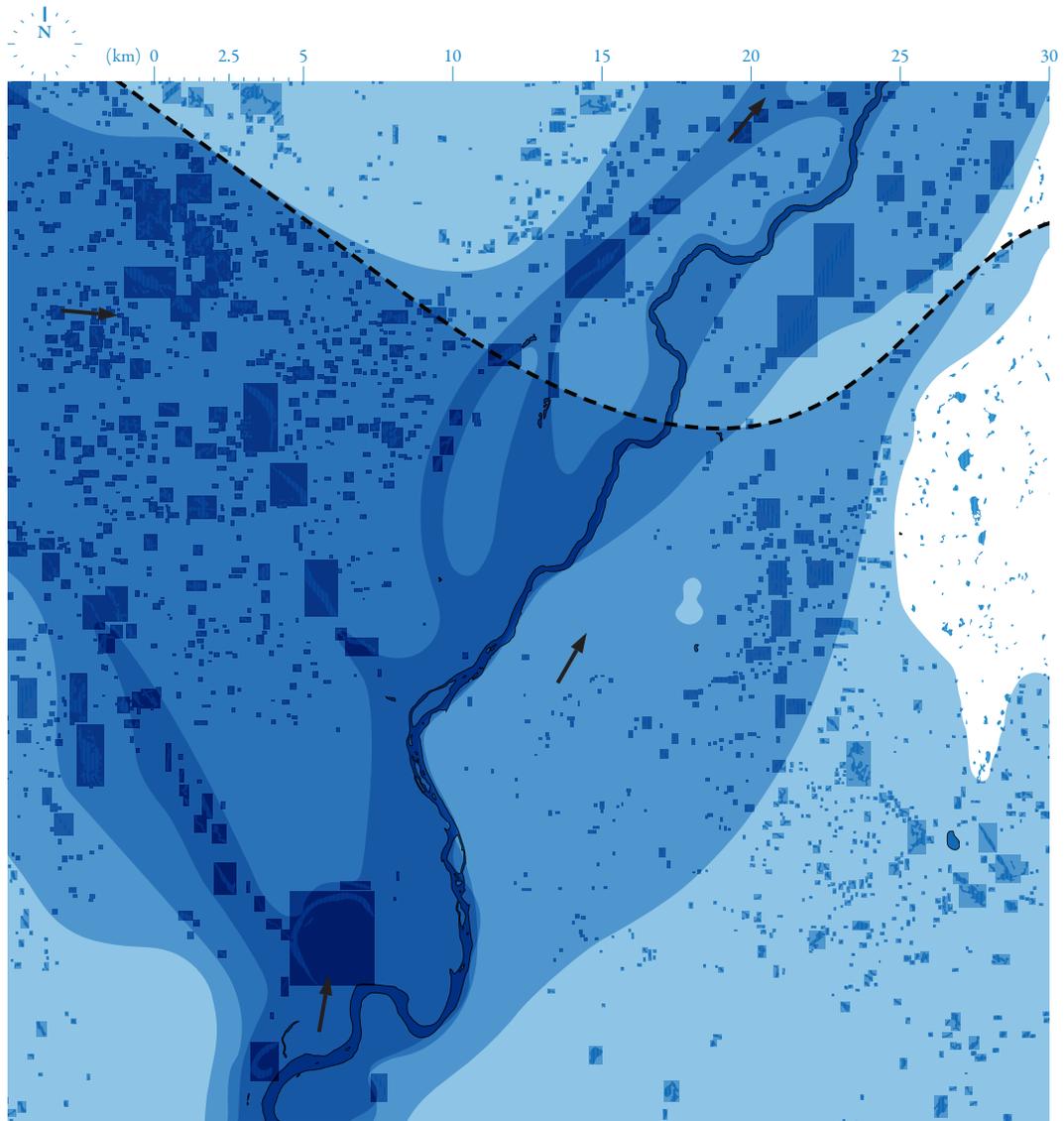
At dusk, the golden heads ripe with seeds nod and dream they are that ancient glacial ocean, swelling and breaking, moon-pulled: you feel an undertow at the edges of the fields and want to go under. Seagulls drift above you, forever it seems, as if they'd been sent from the ark, and they're riding hunger and belief on currents of air. It's easy to imagine you could push off in a boat, wind at your back, going home by a sea that tosses and heaves, without a light to guide you.

Crozier, *Small Beneath the Sky*, 3-4.



12. Formation of the Landscape: Precipitation





13. **Formation of the Landscape: Bodies of Water, 1:250 000**

The South Saskatchewan River was carved out by the release of the Glacial Lake Saskatoon. Slight irregularities in the landscape hold excess precipitation, reducing arable land while expanding the network of fresh water.

## Origin

Logically speaking, the grid extends, in all directions, to infinity. Any boundaries imposed upon it by a given painting or sculpture can only be seen - according to this logic - as arbitrary. By virtue of the grid, the given work of art is presented as a mere fragment, a tiny piece cropped from an infinitely larger fabric. Thus the grid operates from the work of art outward, compelling our acknowledgement of a world beyond the frame.

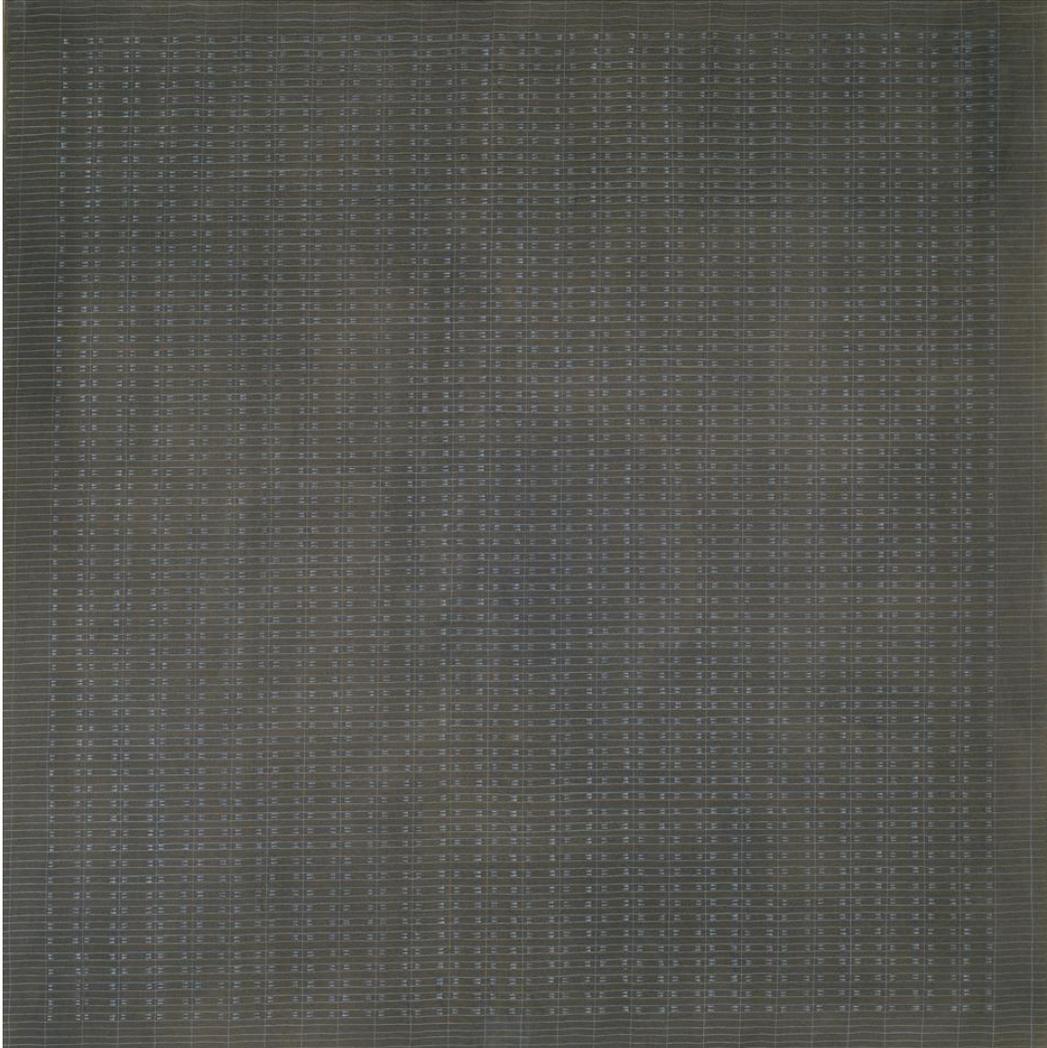
Krauss, "Grids", 18.

To trace an origin is to rationalize, to find meaning, to establish where we are. In the previous examples, this is accomplished either through geological analysis or through storytelling.

The geological analysis of the landscape describes the process that formed each layer. It assigns each one an order and a dimension, both in space and time. The sum of these strata results in the landscape's current form. This account edits hundreds of millions of years into a linear history of manageable ages. Each age is marked by a significant change, the end of one cycle and the beginning of another. The durations of these segments of time, too massive for direct comprehension, can only be grasped in relation to each other. They cycle back from the present, trying to approach an origin.

The earth-diver myth imagines a fantastical way in which the landscape came into being. The story is full of symbolic characters and objects, the sum of which conveys the culture's relationship to the earth. The myth gives no sense of duration, and it cannot be placed at a specific time in history. There is only an implied cyclical time in its beginning with the primordial waters. Should water ever consume the land again, a new cycle of creation would begin.

The events describe something, not created, but transformed through time. They are abstractions; scaled or fluctuating events that must be interpreted by the imagination.

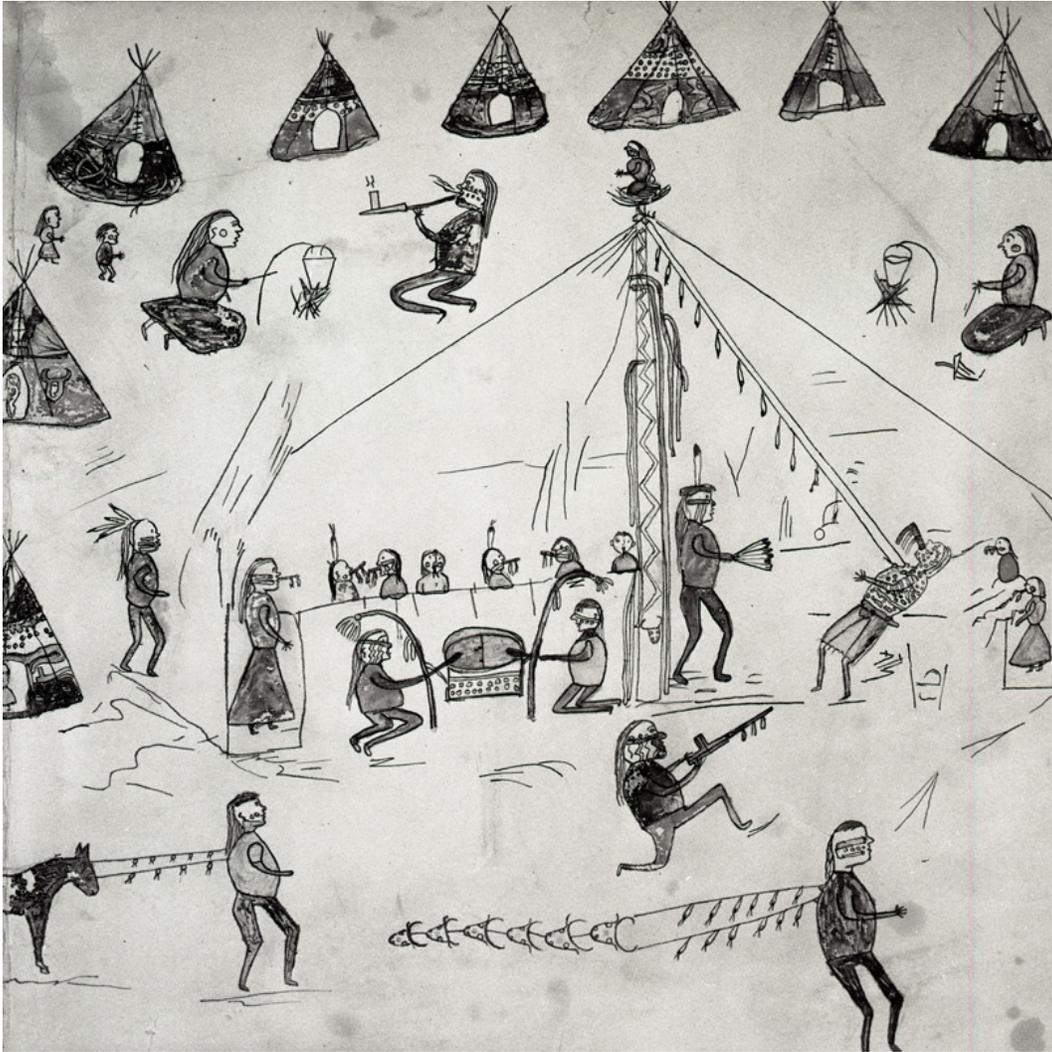


14. Agnes Martin, *White Flower*, 1960.  
The grid shows slight imperfections and bares the human-made nature of all grids.



Three





16. CFQC staff, Indian Sundance Ceremony, ca. 1965.

## Settlement

He stood, a point  
on a sheet of green paper  
proclaiming himself the centre,

with no walls, no borders  
anywhere; the sky no height  
above him, totally unenclosed  
and shouted:

Let me out!

Atwood, "Progressive Insanities of a Pioneer," stanza 1.

The great expanse of the prairies, like the geological history that formed it, was too huge to be understood. The surveyors segmented it with a hierarchical system of squares. The largest division, a township, was made up of 36 sections; sections contained four quarter sections, which measured a quarter mile by a quarter mile, or 160 acres.<sup>1</sup> It was a machine for settlement.

The squares filled up with names of hopeful farmers. Between 1901 and 1911, the number of farms in Saskatchewan increased from 13,000 to 95,000.<sup>2</sup> The transplanted population recalled a more familiar landscape through painting and literature,<sup>3</sup> while the landscape that surrounded them remained foreign and misunderstood. When the time came, the farmers plowed, seeded and harvested their plots of land, shipped the wheat off to be processed, and received enough supplies to get through another winter.

## Movement

The unnatural grid drawn over the prairies opposed the existence of those who presently inhabited that space: “The Power of the World always works in circles,” stated Black Elk, a shaman of the Oglala Sioux, “and everything tries to be round.”<sup>1</sup>

Before the glaciers raked over it, there were people living on this land. They traveled south, ahead of the advancing ice. Generations later, they returned north as the frozen earth came back to life.<sup>2</sup> Later, the buffalo echoed this original journey. Every year, before extinction threatened to erase them from the earth, they migrated south as the cold of the winter moved down from the north, and then followed the retreating snow in the spring.<sup>3</sup> Groups of people followed the herds, camped near water, built up a supply of dried food and warm clothing, and found shelter for the winter.<sup>4</sup> They lived in a pattern of movement across the territory of the prairies.

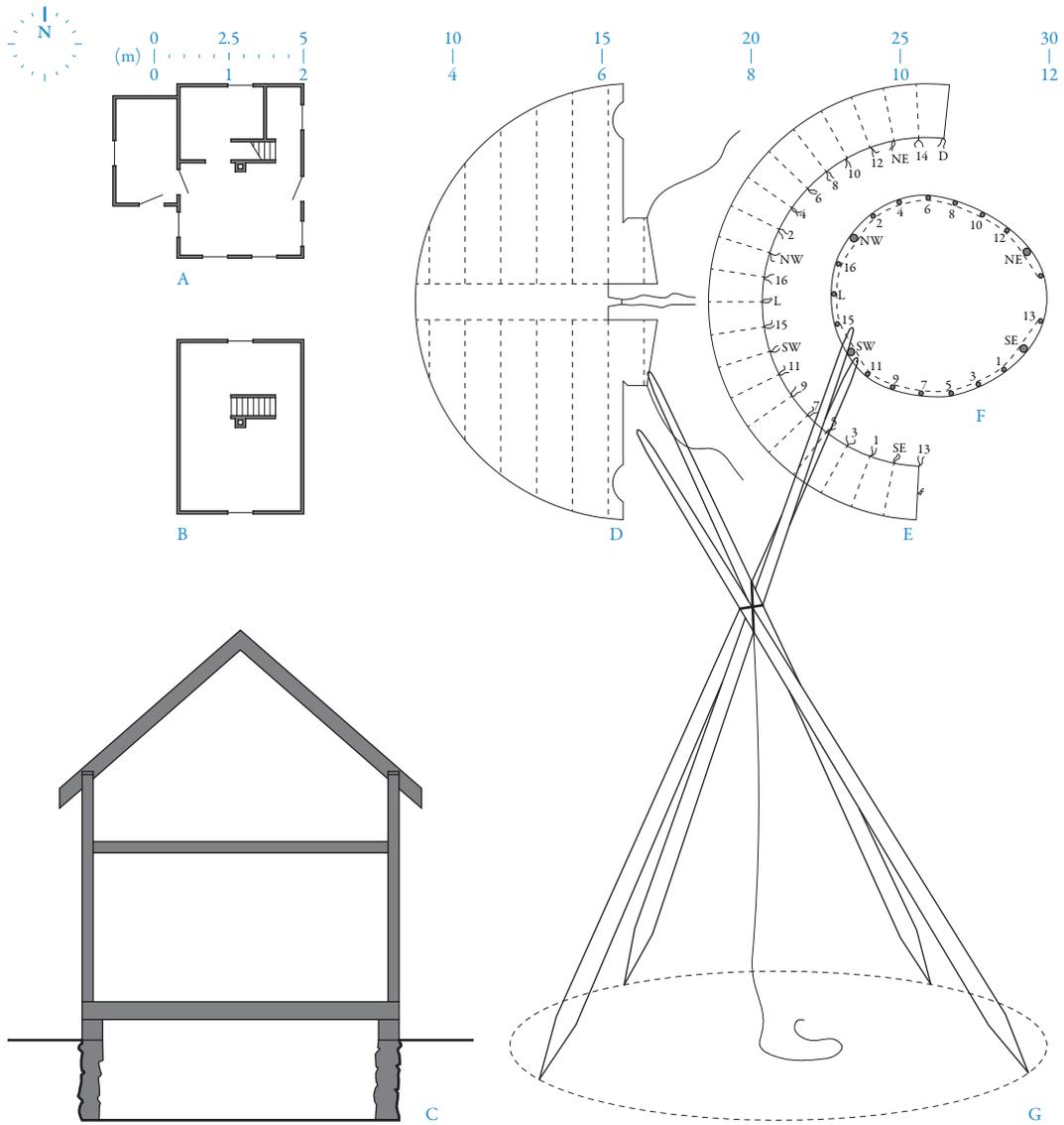
The nomad distributes himself in a smooth space, he occupies, inhabits, holds that space; that is his territorial principle. It is therefore false to define the nomad by movement... Whereas the migrant leaves behind a milieu that has become amorphous or hostile, the nomad is one who does not depart, does not want to depart, who clings to the smooth space left by the receding forest, where the steppe or the desert advance, and who invents nomadism as a response to this challenge.

Deleuze and Guattari, *Nomadology*, 51.

## Subsistence

The foundation rite of Rome joined the earth with the sky through the act of ploughing. This symbolic act was meant to increase the fertility of the city, as ploughing a plot of land increases its yield.<sup>1</sup> The fertility of the land is conditional, in the first place, on the “union of the four elements,”<sup>2</sup> or the four directions of the medicine wheel. The vertical line then provides both physical and spiritual fertility to this union. It is assisted by the plough.

The landscape wants to change; to freeze and thaw with the seasons; to erode and rebuild with the wind; to be drenched with rain or scorched by the sun. The settlers were able to remain in the same location by manufacturing stable conditions in their environment, but they could not prevent its transformation. The redirection of streams for irrigation caused water erosion that would not have existed. Tilling left the dry earth vulnerable to the relentless wind.<sup>3</sup> Alternatively, the First Nations altered their location to remain in a fertile environment, and allowed the natural pattern of change to continue.



Typical Prairie Homestead

- A. First Floor Plan (1:250)
- B. Second Floor Plan (1:250)
- C. Section (1:100)

Typical Blackfoot Tipi

- D. Tipi Cover (1:250)
- E. Tipi Liner (1:250)
- F. Plan of the pole location (1:250)
- G. Diagram of the first four poles (approximately 1:100)

17. Shelter, 1:100/1:250

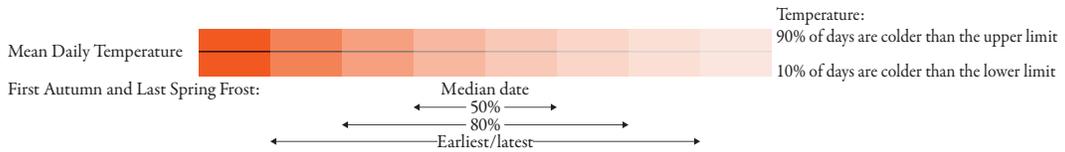
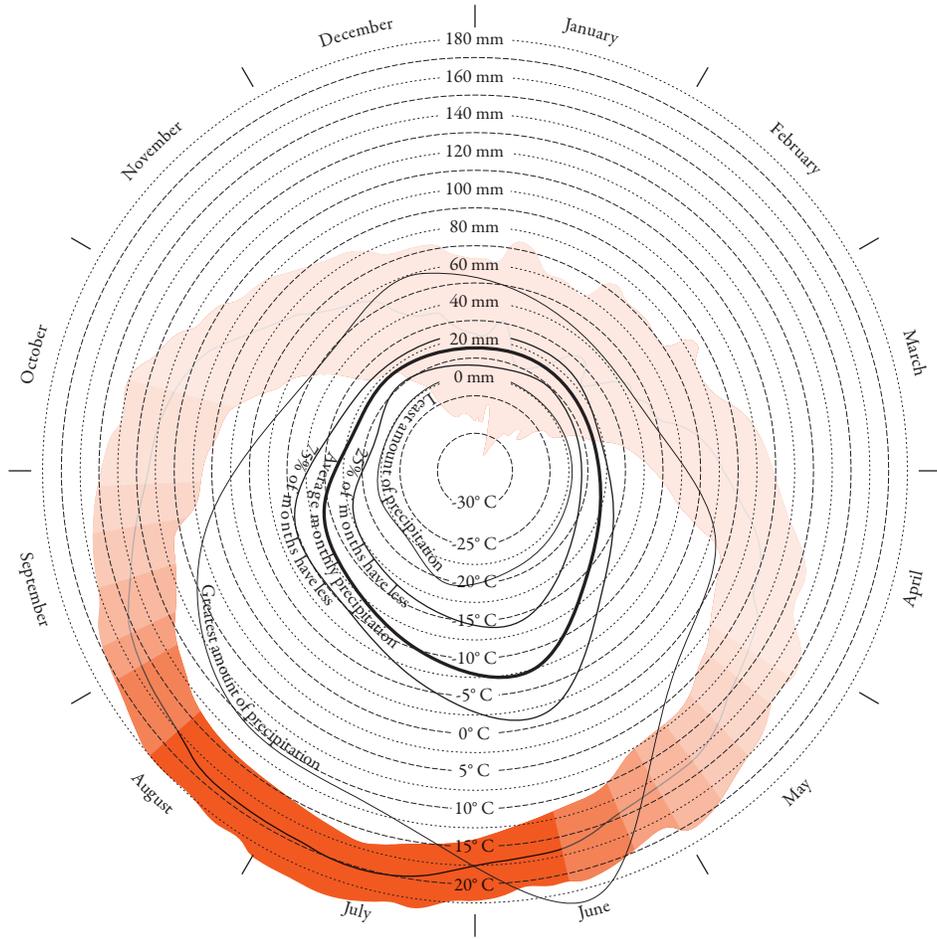
The illustration compares a typical prairie homestead – its solid foundation separating it from the earth – with a first nations tipi – its transportable components lightly resting on the surface.

## Seasons

Just as the First Nations people hunted and moved according to the weather, the farmer seeds after the frost has crept out of the ground and harvests in anticipation of cold weather setting in again. The success of agriculture depends on the regularity of the changing seasons, but the cycle shifts from year to year. Winter continues into spring, trespasses into autumn, or makes an appearance on a day in summer.

Living itself is a process, a continuous change; if it stands still the form disintegrates – for *the permanence is a pattern of changes*.

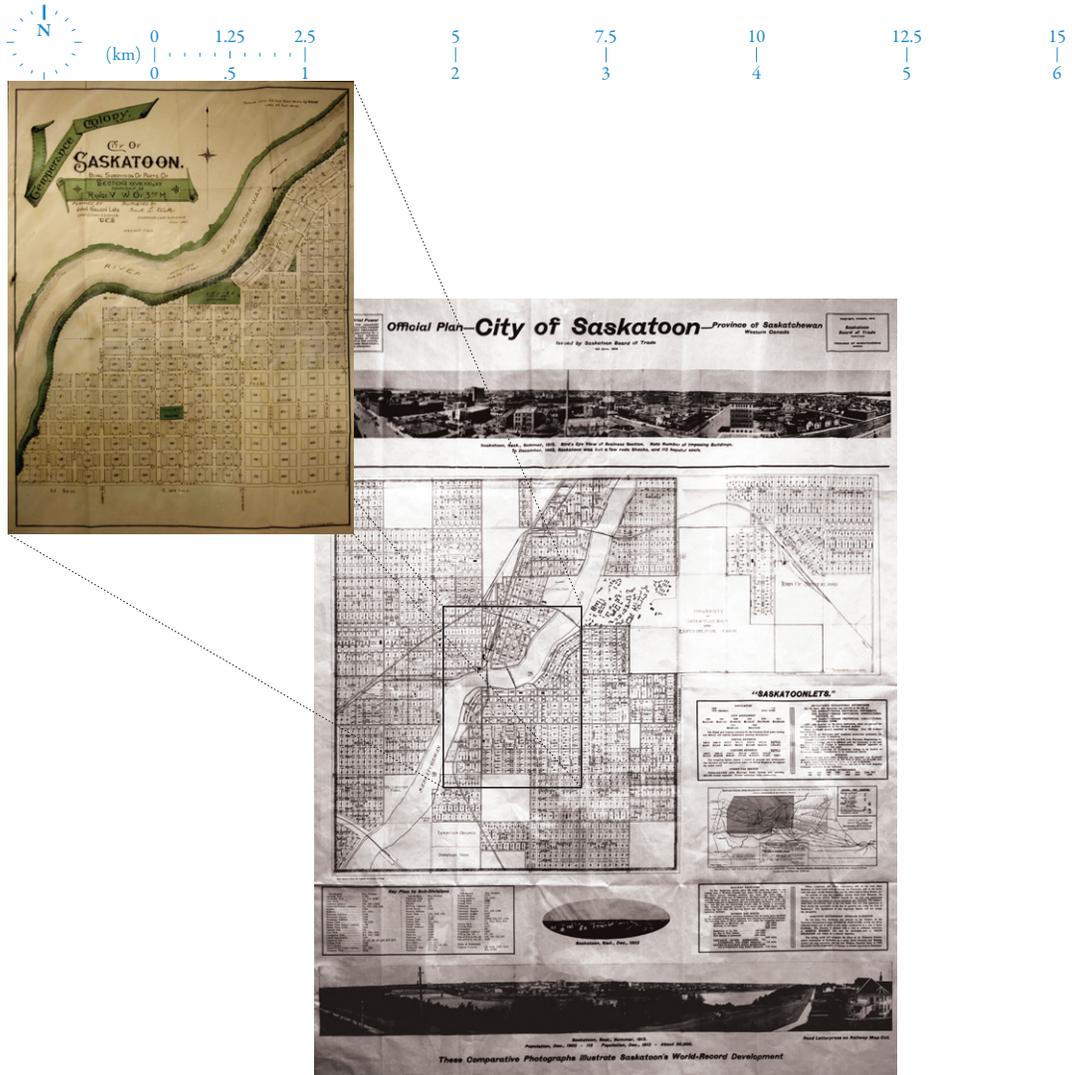
Langer, *Feeling and Form*, 66.



18. Temperature, Frost and Precipitation

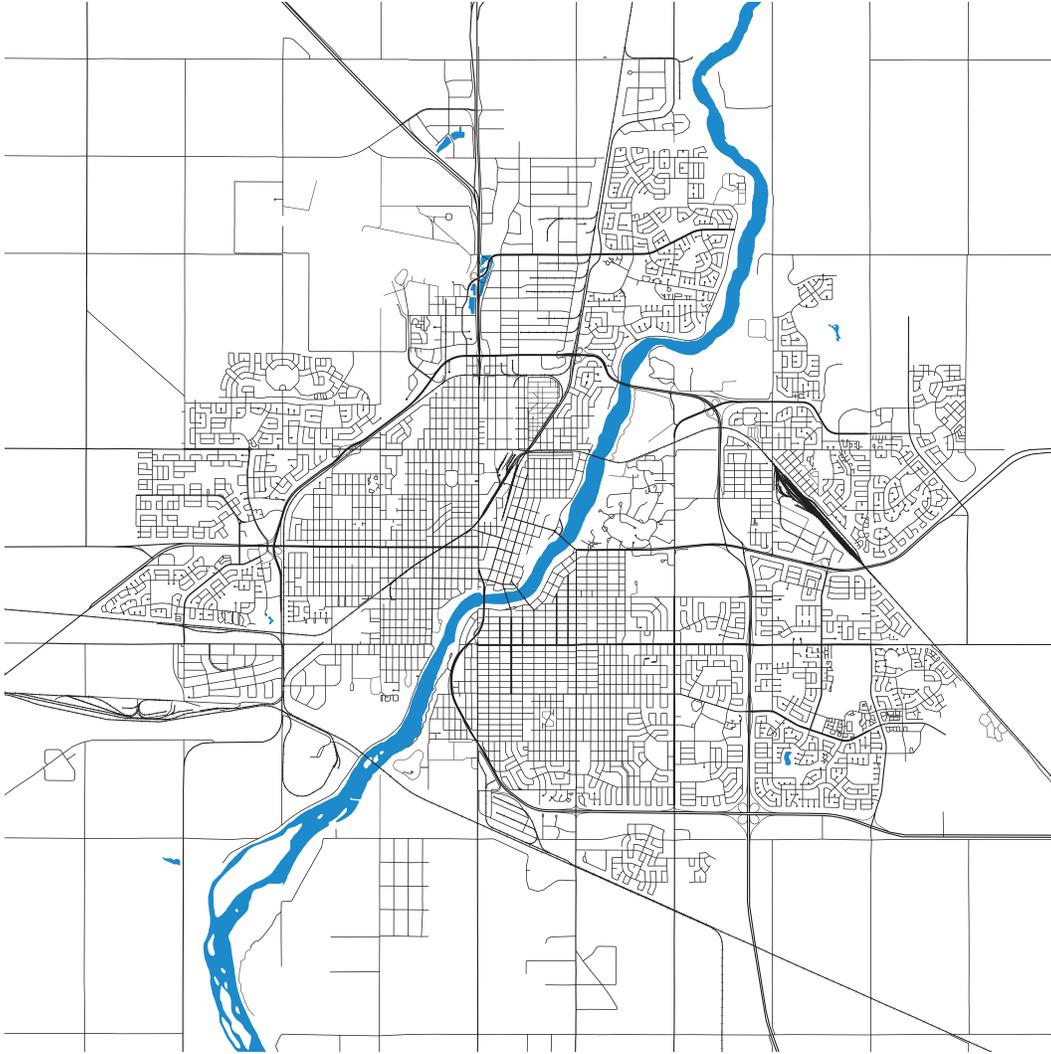


Four



19. **Formation of the City: From 1886 to 1914, 1:50 000/1:125 000**  
 The Temperance Colony first surveyed the east bank of the river in 1883 (1:50 000). The Official Plan of Saskatoon in 1914 (1:125 000) highlights the rapid growth of the city.





20. Formation of the City: Present, 1:125 000



21. A Wheat Field in Autumn

## The City

In 1883, the Temperance Colonization Society surveyed a plot of land on the east bank of the South Saskatchewan River and constructed their first building.<sup>1</sup> The survey confidently read “The City of Saskatoon”.

The first rail line came through Saskatoon in 1890. The train station was built on the west side of the river, soon followed by a surveyed area of 18 blocks that would become the city centre.<sup>2</sup> By 1901, however, the population of Saskatoon had reached only 113.<sup>3</sup> In 1912, it was 28,000.<sup>4</sup> In this time, the city had gained a traffic bridge – connecting the two halves of the city – and two additional railways – connecting the city to the surrounding grid of farmland. A warehouse district formed along the tracks just north of the train station, adjacent to the city centre, and Saskatoon became a distribution hub. Among the buildings that populated this industrial area were the Robin Hood flour mill, the Rumely Company warehouse, the Tees and Persse Company building, and the John Deere Plow Company building – a robust timber and masonry structure built in 1910 for the assembly and display of agricultural implements,<sup>5</sup> and the proposed site for the university’s new school of architecture. Saskatoon had daily and weekly newspapers, held agricultural conventions and musical events,<sup>6</sup> built two hospitals and a collegiate and was awarded the University of Saskatchewan.<sup>7</sup>

Founded on the aspirations of a hundred dreamers and accelerated by the grid, the colony located in Saskatoon grew into a centre for distribution, services, culture and education.

## The Country

Made by human hands, grids are endowed with a most human contradiction: a vigorous free spirit and a propensity to control.

Higgins, *The Grid Book*, 11.

The grid is everywhere in the country. Individual farmyards positioned within squares of fields are connected by a grid of gravel roads. These lead to a network of highways and railway lines that string together the towns and cities. Everything is incremental: the rows of wheat, the spacing of the fence poles that mark the limits of the sections of land, the telephone poles that follow every road. The regularity of the surroundings is comfortably predictable; a quiet, steady rhythm that tries not to compete with the variable sky. Perhaps it tries to frame the sky, encouraging senseless daydreaming of things to fill the spaces.

The country does not simply stay the same; it actively opposes change.



22. Images from "Saskatoon, Saskatchewan: The Wonder City", 1911.

# SASKATOON

**H**AS over 100 Wholesale Firms. Has 16 Passenger Trains Daily arriving and departing from three Railway Stations. Has Modern Water and Sewage Systems. Has 12 Modern Hotels. Has 13 Banks. Has 2 Daily Newspapers and 3 Weeklies. Has splendid Modern Schools, Churches and Theatres, and

**Is an Up-to-Date City in Every Respect**

### BUILDING STATISTICS

1907—\$377,211    1908—\$115,625    1909—\$1,002,055    1910—\$2,817,771

### CITY ASSESSMENT

1906	1907	1908	1909	1910	1911
\$2,517,145	\$6,621,337	\$7,450,135	\$8,156,357	\$10,748,639	\$13,000,000
					(conservatively)

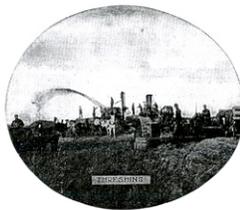
### POPULATION

1903—113    1906 - 3,011    1911 (February)—over 16,000

### SCHOOL ATTENDANCE

1906—296    1907—364    1908—651    1909—1,113    Feb., 1911—1,660

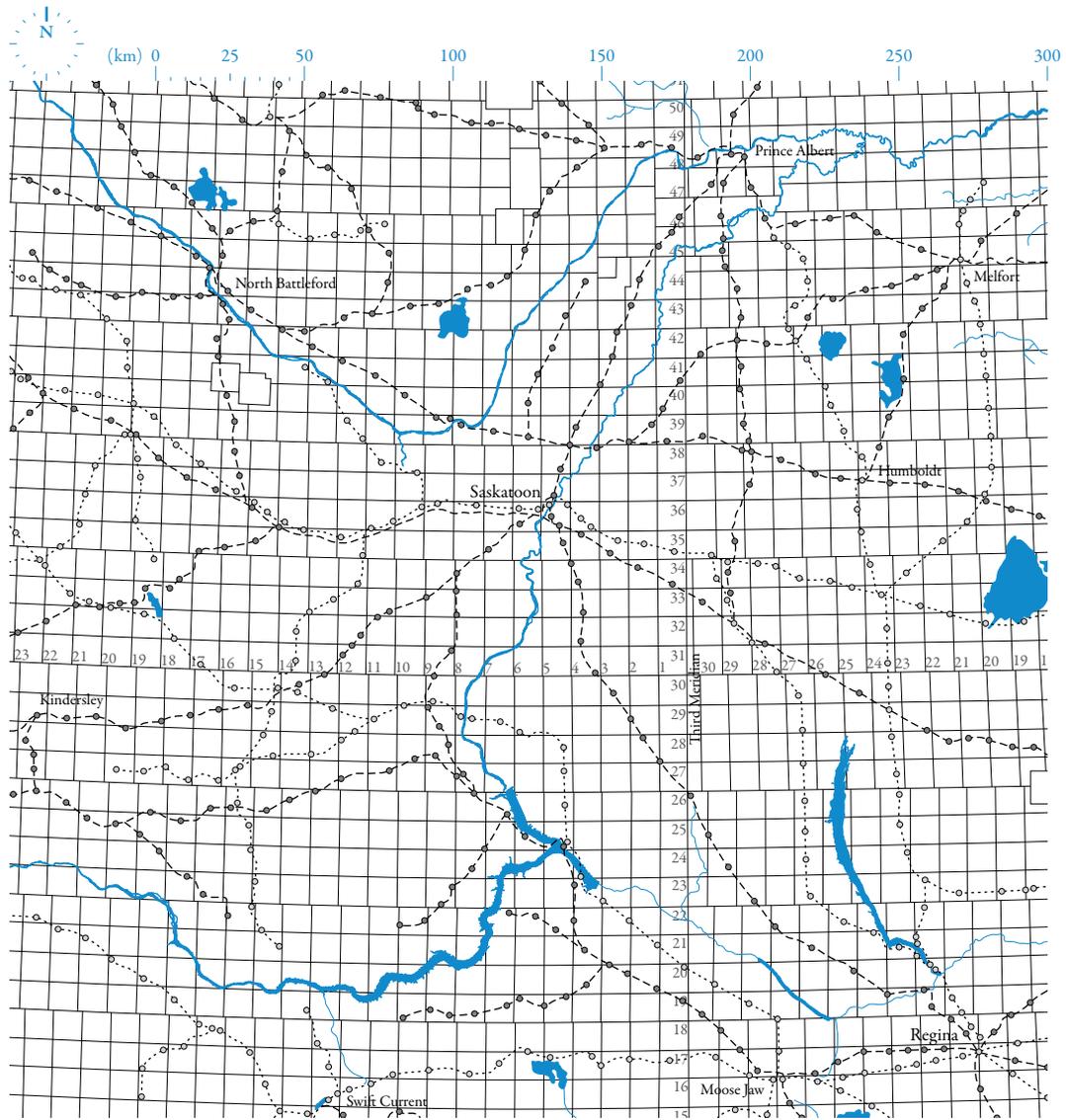
*Can any other City in the world equal this record ?*



## The Train

Railway tracks cut across the province with as little regard for the grid as the grid had for the landscape. They connected Saskatoon with the country, coming within ten miles of all good farm land.<sup>1</sup> They also cut through the city and assumed the role of the river before any bridges crossed over it. The downtown core, the university, and many of the original neighborhoods were east of the division. Anything to the west of the tracks gained a reputation as the bad part of town. A single pedestrian bridge connected the two halves of the city. Though the railway line has since been removed from the city centre, the division persists.

The John Deere Plow Company building is now at the end of a spur line that used to connect to the central train station and run through the city. The building's geometry is a direct result of the intersection of the city grid with the railway line. This location along the symbolic dividing line of the city allows the school of architecture to connect with a different setting in each of the four directions: the university to the east, the city centre to the south, the less desirable residential neighborhoods to the west, and a glimpse of the country to the north.



Canadian National Railway    - - - - -  
 Canadian Pacific Railway    ······  
 Township    36    Range    5

23. Railway Lines in Southern Saskatchewan, 1:2 500 000

This map depicts the current extent of railway lines surrounding Saskatoon in 1932. The large scale reveals imperfections in the grid; every fourth horizontal is a "correction line" for the curvature of the earth.



24. Aerial view of downtown Saskatoon, ca. 1964. The CN Railway runs through the centre of the image. The John Deere Plow Company building sits west of the tracks, just south of the two mills that mark the northern boundary between the city and country. A pedestrian bridge crosses over the tracks, connecting the two halves of the city.





25. North of the John Deere Plow Company building



26. Leonard A. Hillyard, Workers at Robin Hood flour mill, between 1930 and 1949.



JOHN DEERE PLOW Co

1847

1910

27. John Deere Plow Co. building, ca 1912.



JOHN DEERE PLOW CO. LTD.

THE COVILLE COMPANY  
WHOLESALE GROCERS

## Duration

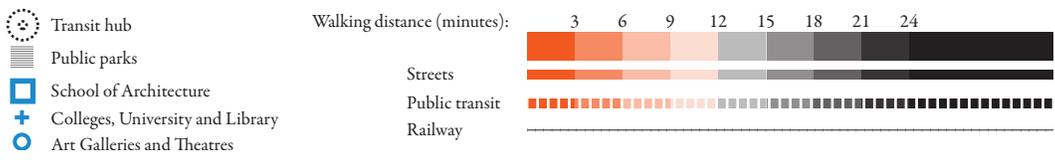
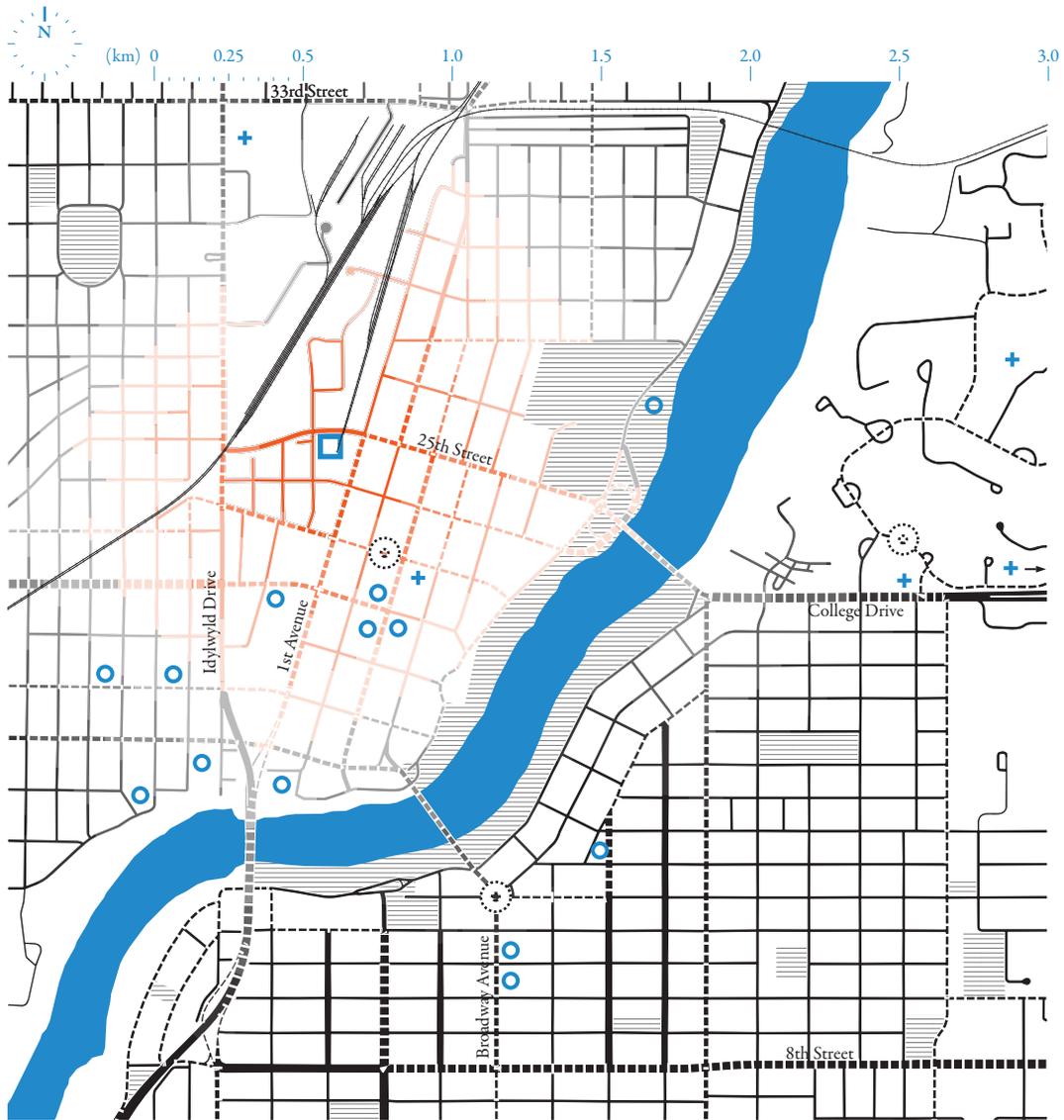
There are two types of time: measured time and perceived time.

The train from Toronto to Saskatoon takes forty-eight hours. In the Canadian Shield, walls of trees or rock pass by the window in a blur, opening briefly to a small lake or river. In the prairie, you can focus on a point in the distance and watch the lines on the field shift in relation to it. The incremental prairie stretches and compresses time as it passes by. Time and distance are only measureable at the scheduled stops.

Before the railway came to Saskatoon, the trip could take over a month in bad weather. From the train's final stop in Moose Jaw, settlers had to travel on foot for the remaining 225 kilometers.<sup>1</sup>

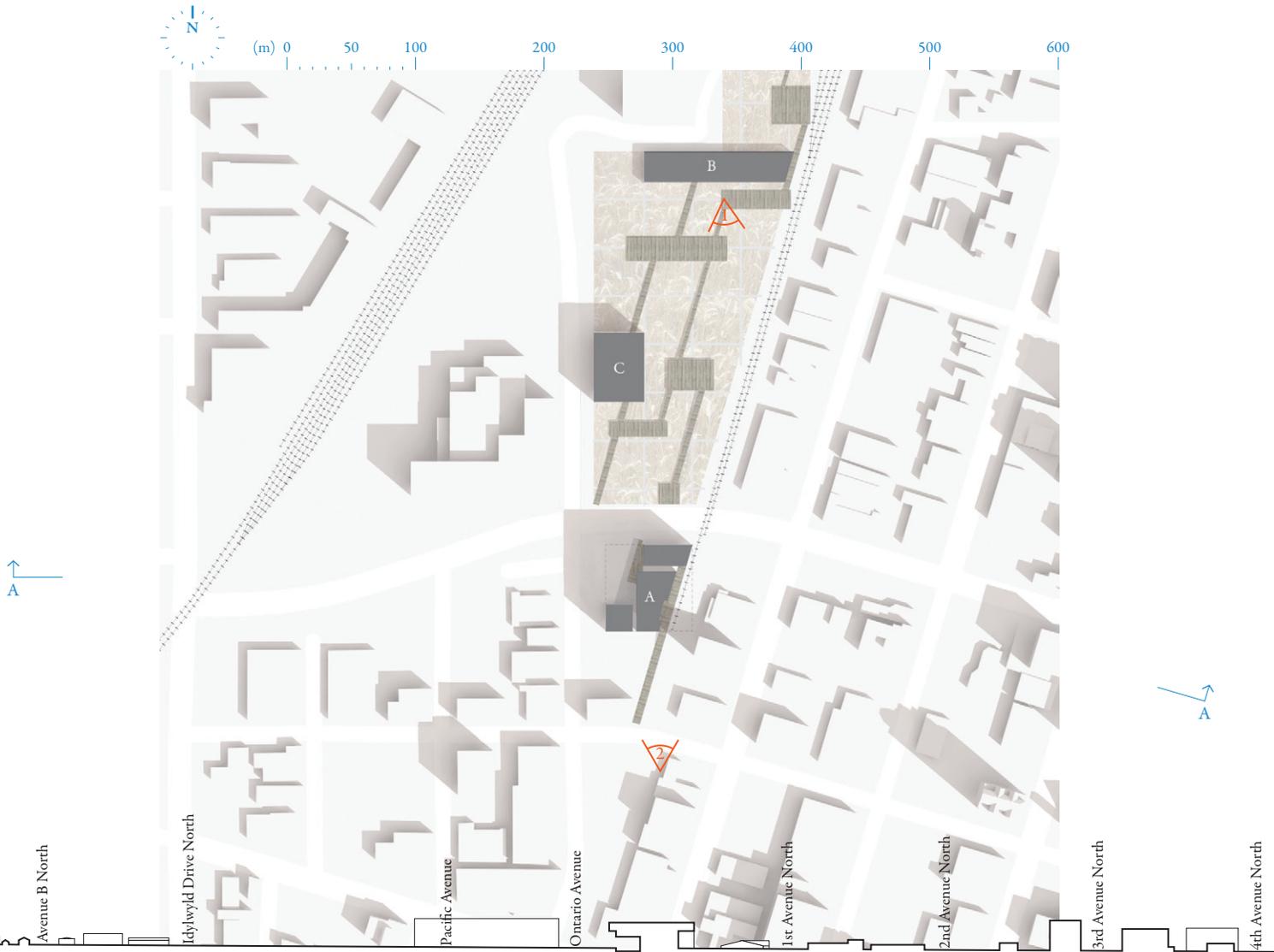
The tracks to the east of the building recall the scheduled vibrations of passenger and freight trains that used to pass by. The activity of the city center to the south is evidence of time passing. The sun moves across the sky and measures out the day on the south face of the building.

Looking north, down the tracks toward the prairie, or up, through the clerestory windows toward the sky, measured time fades away.



28. Location and Transportation, 1:25 000

The school of architecture sits at the intersection between the artistic culture – extending from the city centre into the Broadway district just south of the river – and a line of educational institutions that run from east to west.



29. **Site Plan, 1:5000**

A public park weaves through the research crops that are bracketed between the railway line and three buildings: the School of Architecture (A) at the end of the spur line; the Agricultural Research and Soil Remediation Centre (B) at the north end of the site; and a parking structure (C) to the west.

30. **Site Section A, 1:5000**

The section begins in the residential neighbourhood to the west, passes through the north end of the city centre and continues over the river to the University of Saskatchewan campus.

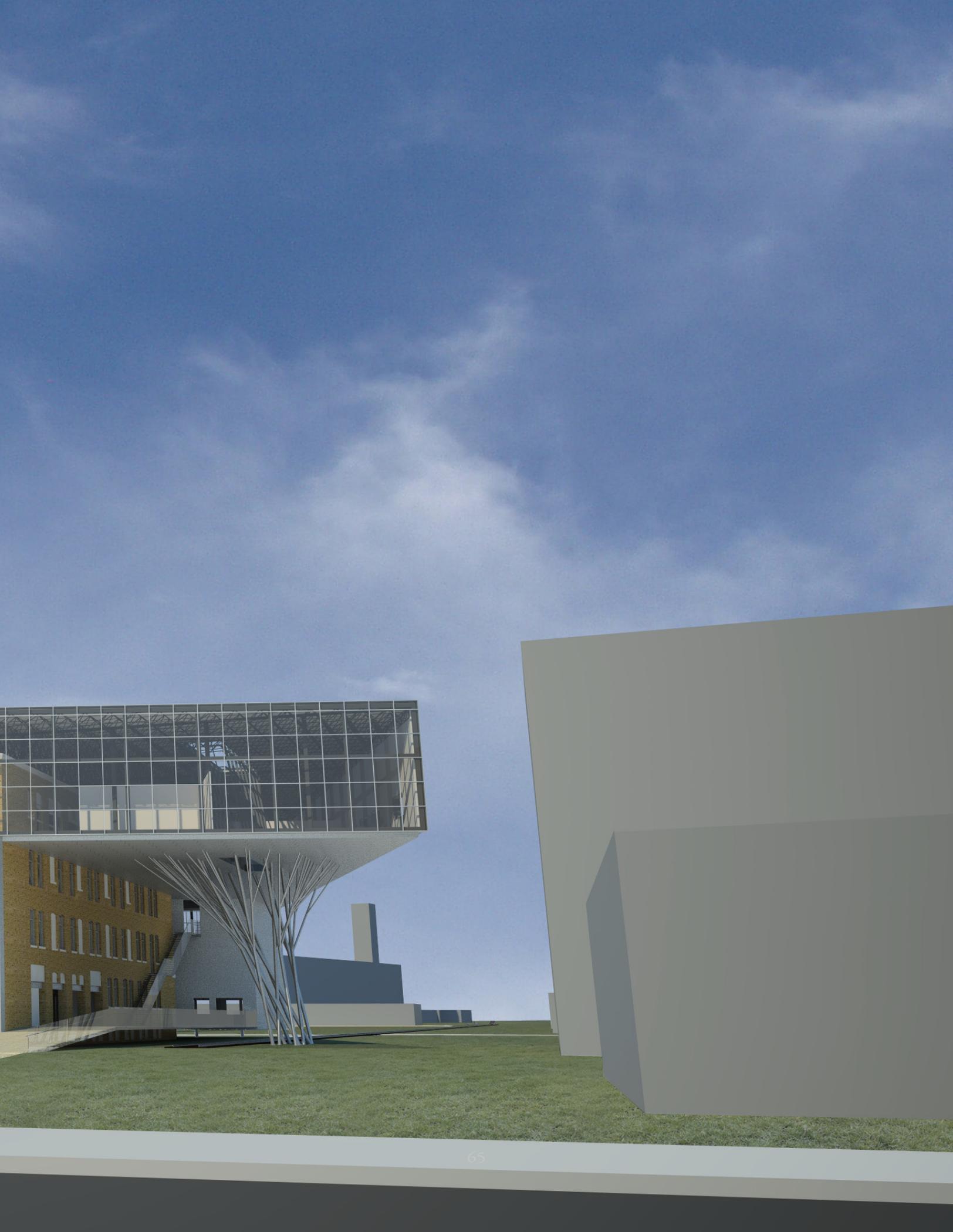


31. **Perspective 1**

The platforms woven between the research crops, with displays of student's work, create a new public landscape within the city.



32. **Perspective 2**  
The south elevation of the building opens toward the Saskatoon's downtown, inviting the public to be involved in the life of the school and the students to be involved in the life of the city.





Five



(m) 0 20 40

80

120

160

200

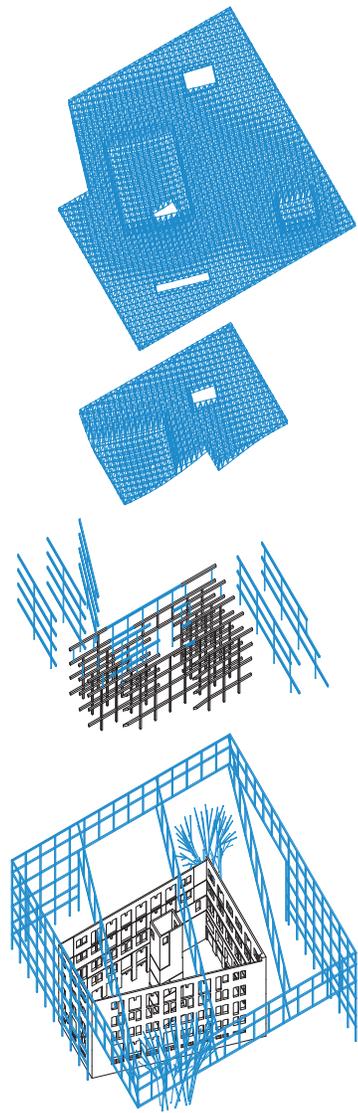
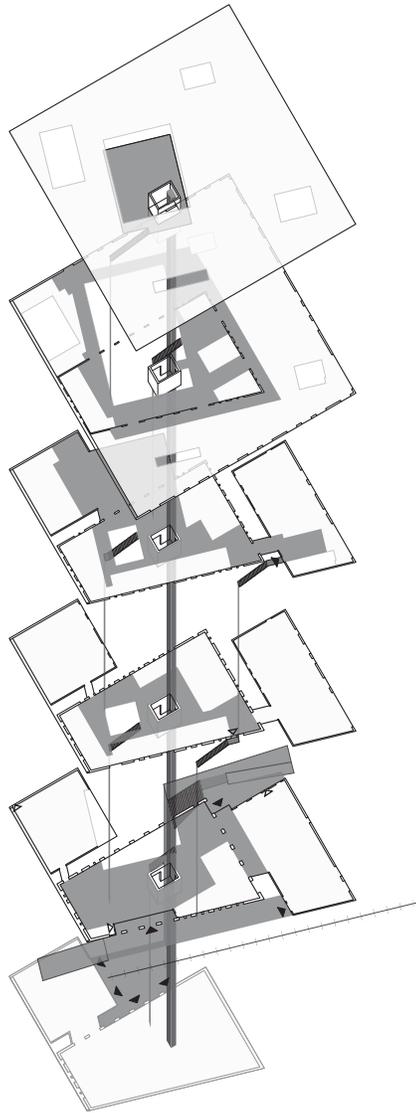
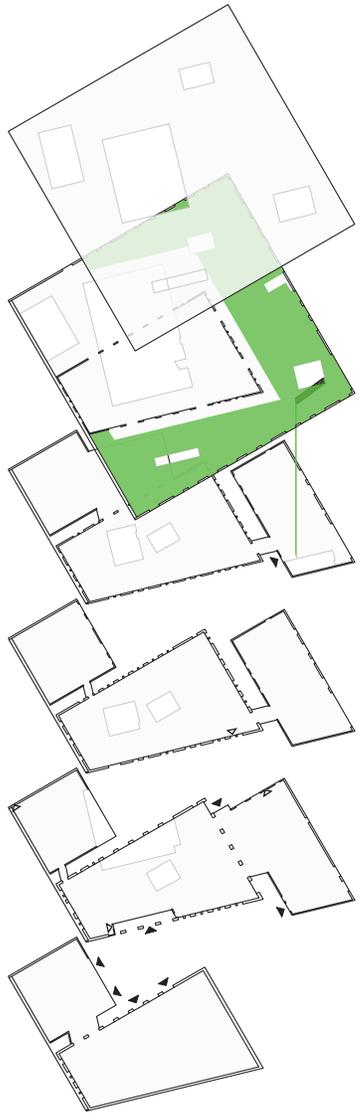
240



-  Workshops, technology and art studio spaces
-  Faculty and staff spaces
-  Library, lecture hall, classrooms and seminar rooms
-  Undergraduate and graduate studios
-  Circulation and public spaces

-  Fire Exits
-  Entrances

-  Steel structure
-  Existing post and beam structure
-  Existing masonry structure



## Resources

The top storey of the school extends out, regenerating the rectilinear form that would have been, had the railway not cut at an angle through the site. At the base of the school, the workshop descends into the earth and spills out to a sunken court. The digital fabrication space overlooks the assembly area of the workshop. Above this, spaces related to making – computer labs, the photography studio and the darkroom – stack along the glazed south façade of the building, facing the city.

There is a rhythm to making that recalls the incremental prairie landscape. The senseless daydreaming of the country gains materiality and purpose, resulting in a simultaneous dreaming-production. In these spaces, students develop an intuition by testing ideas through making.

The body and the hand of the maker fuse work and thought into a singular action.

MacKay-Lyons and Buchanan, *Ghost*, 151.

## Reflection

People who have been schooled down to size let unmeasured experience slip out of their hands. To them what cannot be measured becomes secondary, threatening.

Illich, *Deschooling Society*, 40.

The library, lecture hall, classrooms and seminar rooms are distributed throughout the upper levels of the building. These spaces generally focus inward or to the north. They are directly accessible from the studio, which sprawls out across the top level of the school.

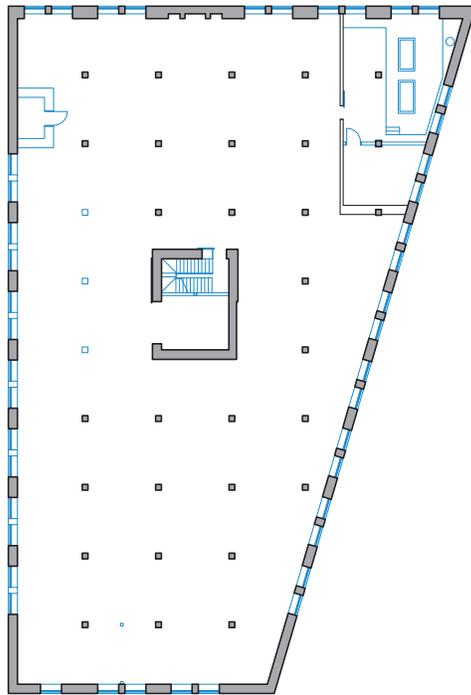
In reflecting, ideas are tested through discussion and thought; connections materialize between things once thought unrelated. Reflection is as important as making, but its progress is more difficult to measure and it cannot be contained. It occurs in prescribed spaces for reflection, as well as anywhere else – perhaps simultaneously with the act of making that it compliments. The role of the spaces of focused reflection, then, is like that of the plough that augments the productive relationship between the earth and the sky.



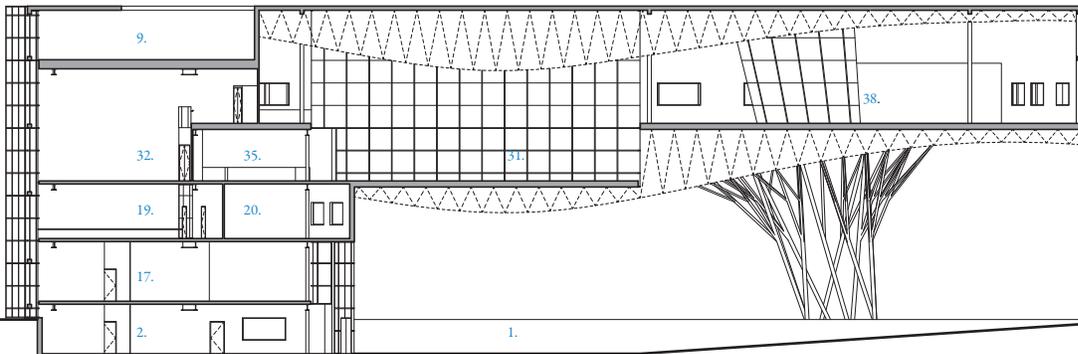
- 1. Sunken Court
- 2. Workshop – assembly
- 3. Workshop – metal
- 4. Workshop – wood
- 5. Workshop Office
- 6. First Aid
- 7. Spray Booth
- 8. Materials Library
- 9. Mechanical/Electrical Room
- 17. Digital Fabrication
- 19. Computer Labs
- 20. Media Lab – reception, offices, workroom + storage
- 31. Review Space
- 32. Lecture Hall
- 35. Kitchenette
- 38. Undergraduate Studios

34. Basement Floor Plan, 1:500

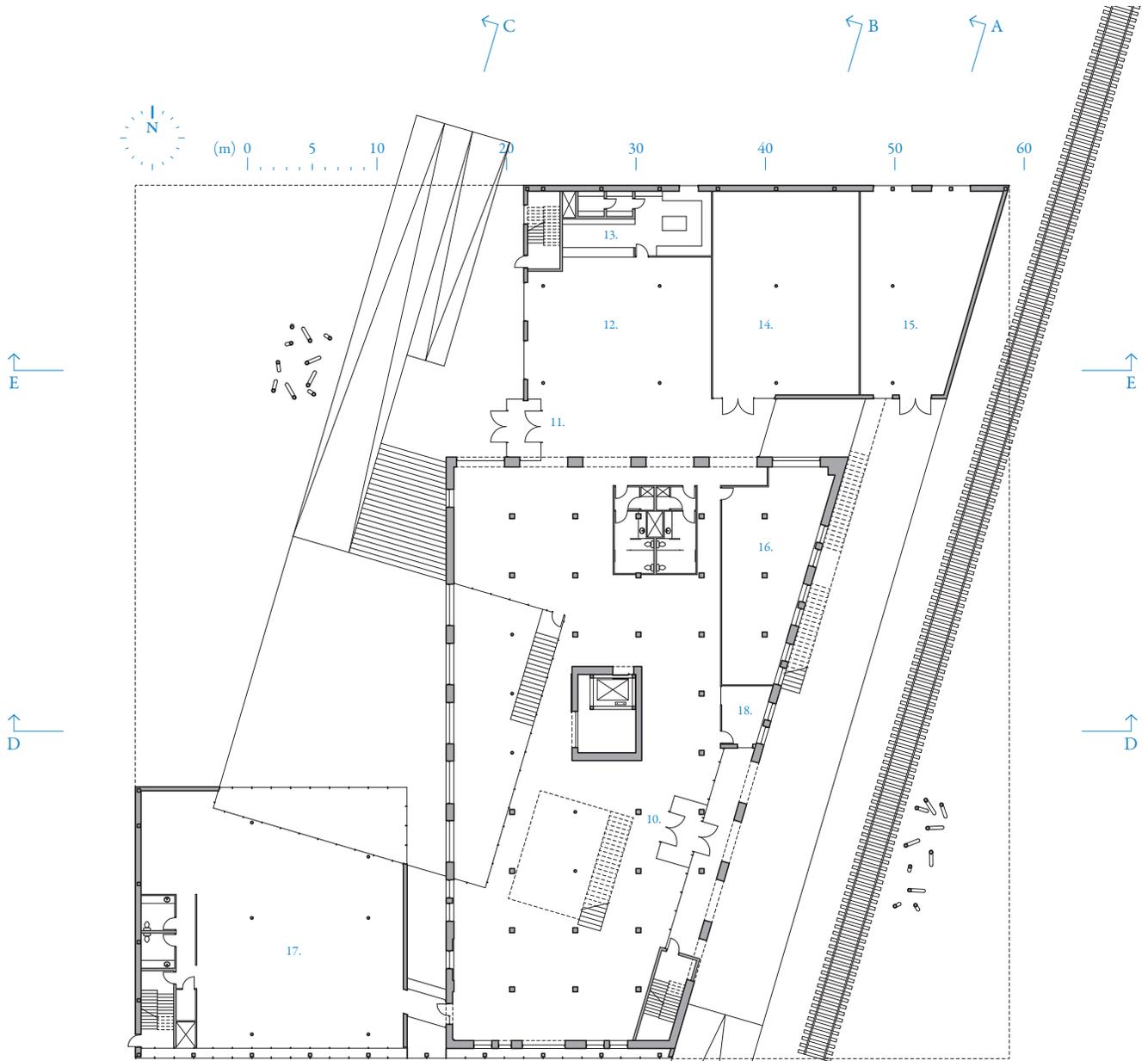




35. Existing Basement Floor Plan, 1:500



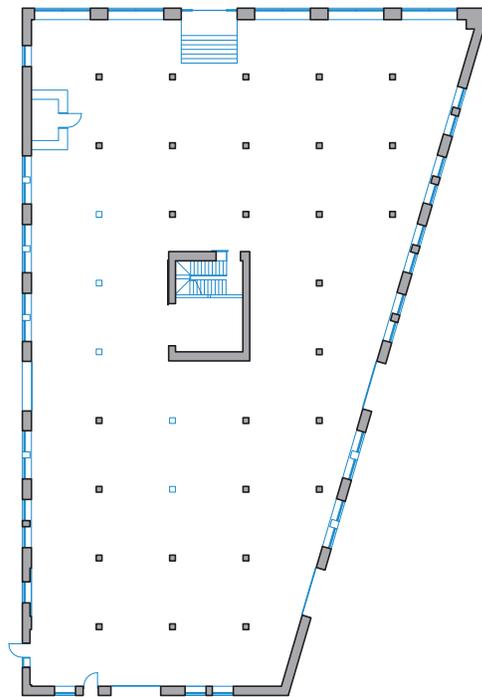
36. (Top) Perspective 3  
The workshop looking out to the sunken court.
37. (Bottom) Section C, 1:500



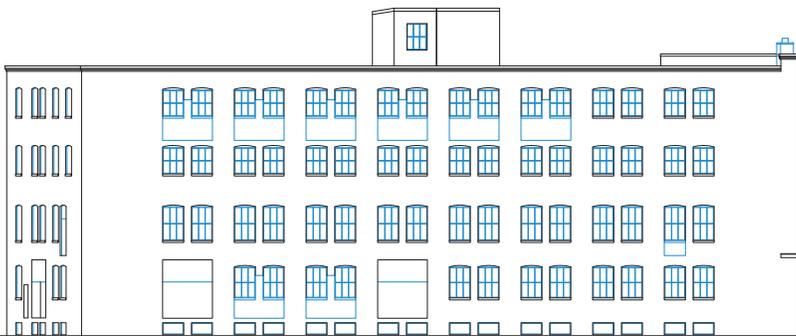
- 10. Main Entrance
- 11. Cafe Entrance
- 12. Public Cafe + Lounge
- 13. Kitchen
- 14. Gallery
- 15. Art Studio
- 16. Gym
- 17. Digital Fabrication
- 18. Security Office
- 19. Computer Labs
- 26. Library
- 37. Graduate Offices
- 38. Undergraduate Studios

38. First Floor Plan, 1:500





39. Existing First Floor Plan, 1:500



40. Existing Section A, 1:500





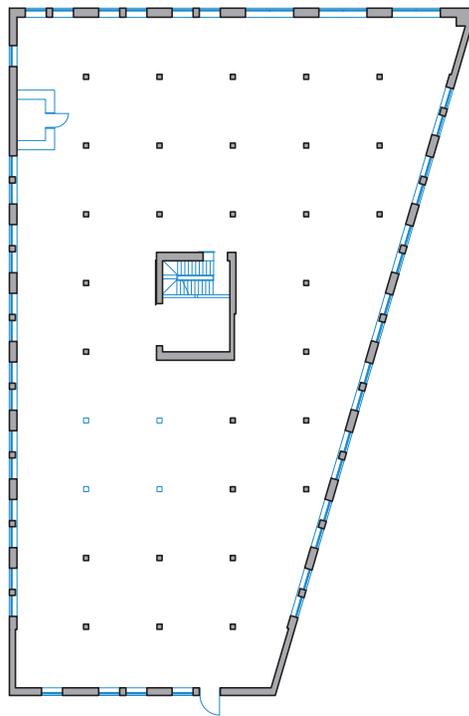
41. (Top) Perspective 4  
The ramp up to the main entrance and the library entrance parallels the railway tracks.
42. (Bottom) Section A, 1:500



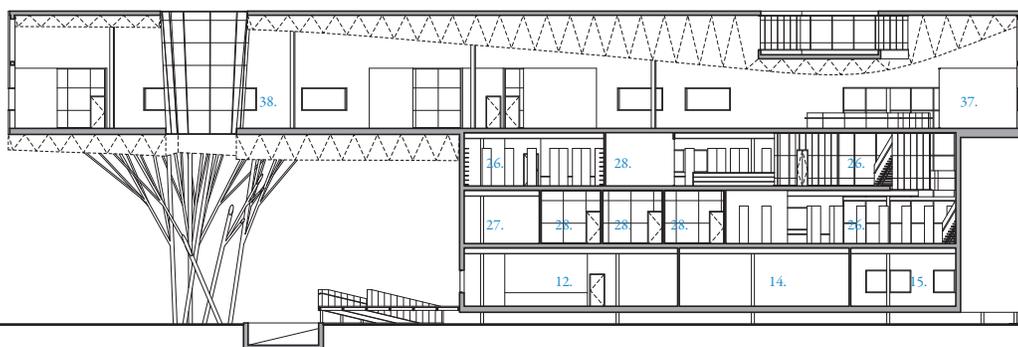
- 12. Public Cafe + Lounge
- 14. Gallery
- 15. Art Studio
- 19. Computer Labs
- 20. Media Lab – reception, offices, workroom + storage
- 21. Photography Studio
- 22. Darkroom
- 23. Main Office
- 24. Wardroom + Faculty Lounge
- 25. Administrative Staff Offices
- 26. Library
- 27. Rare Books + Archives
- 28. Library Staff Offices
- 29. Seminar/Meeting Rooms
- 30. Faculty Offices
- 37. Graduate Offices
- 38. Undergraduate Studios

43. Second Floor Plan, 1:500

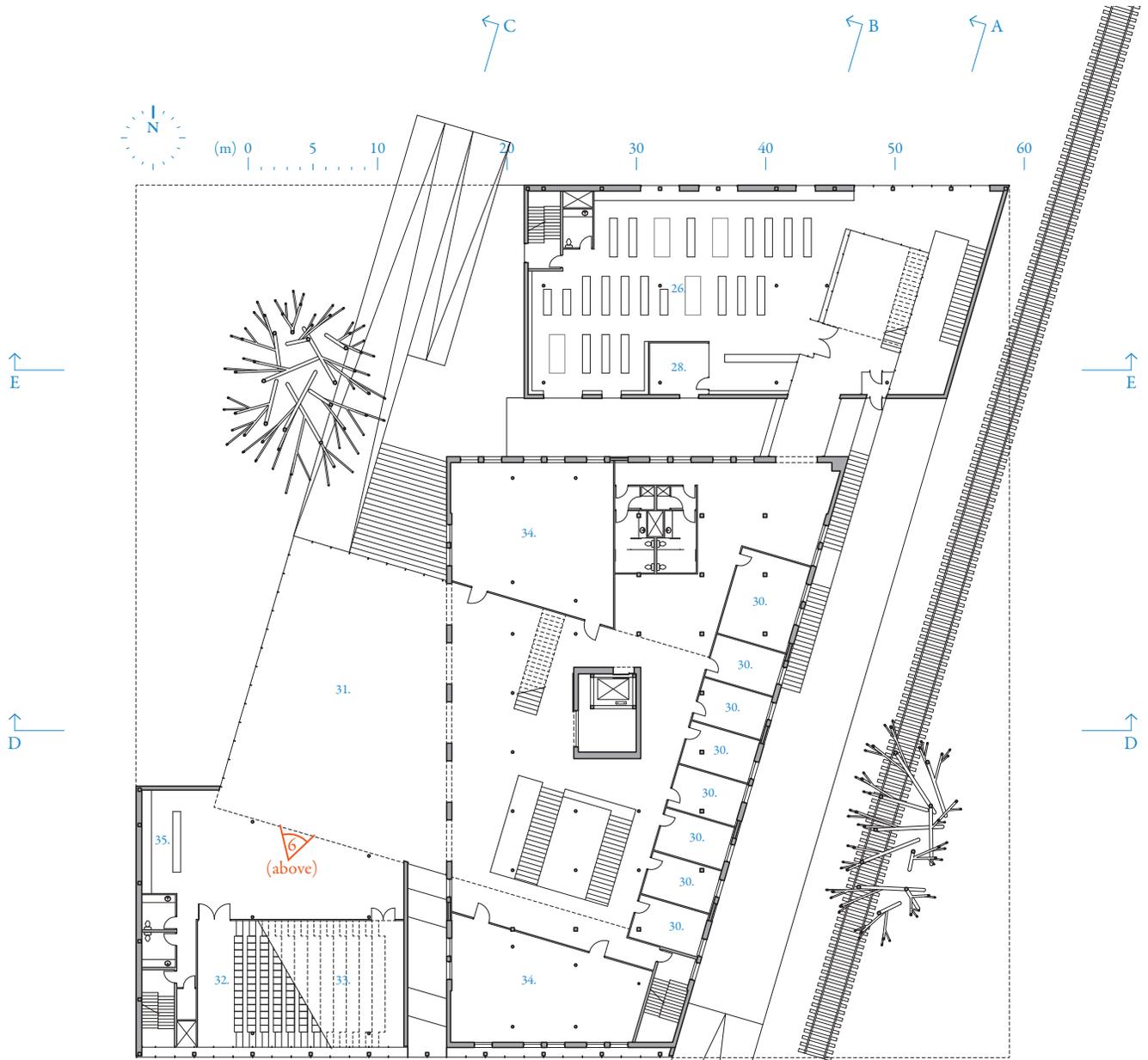




44. Existing Second Floor Plan, 1:500



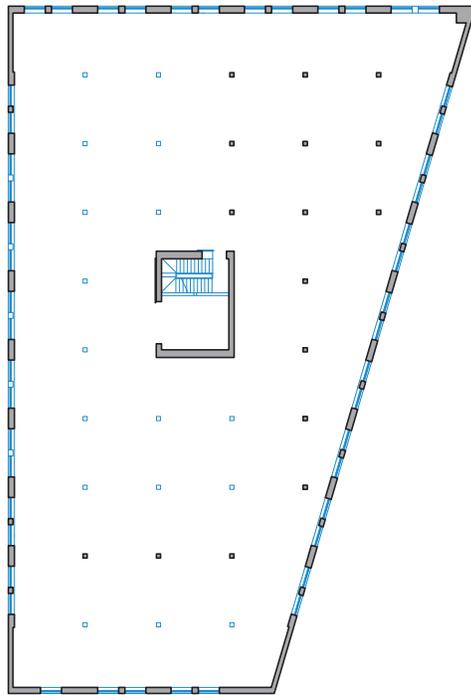
- 45. (Top) Perspective 5  
The library window looks north over the research fields, past the mills, to the country beyond.
- 46. (Bottom) Section E, 1:500



- 3. Workshop – metal
- 4. Workshop – wood
- 9. Mechanical/Electrical Room
- 14. Gallery
- 21. Photography Studio
- 26. Library
- 29. Seminar/Meeting Rooms
- 30. Faculty Offices
- 31. Review Space
- 32. Lecture Hall
- 33. Storage
- 34. Classrooms
- 35. Kitchenette
- 37. Graduate Offices
- 38. Undergraduate Studios

47. Third Floor Plan, 1:500





48. Existing Third Floor Plan, 1:500



49. Existing Section B, 1:500



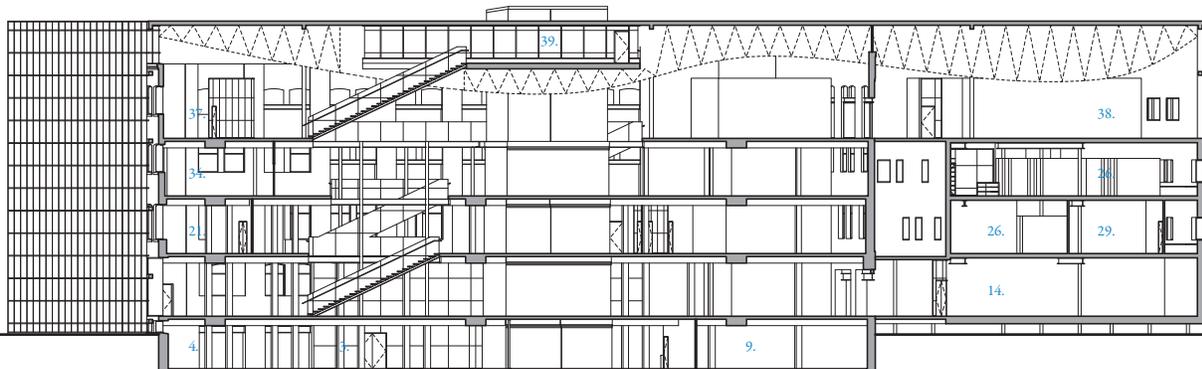
## Openness

Gradual ramps connect the school with the country to the north and the city to the south. These physical connections are qualified by a distinct visual connection on each of these two sides – a selectively glazed north façade and a fully glazed south façade. These arrive at a publicly programmed main floor, which contains a café and lounge, a gallery and an art studio. The floor opens to allow views to workshop and the sunken court.

The main circulation creates a void through the centre of the existing building and connects you with all spaces in the school as you move through it. The existing brick core remains to anchor the space. Light plunges down through its glazed roof, highlighting the edges of the freight elevator within; washing down the textured surface of the walls.

The void grows to envelope the review space on the third floor, then opens to horizontal views across the studio and out to the horizon. From the studio, secondary circulation routes lead you down into the library or through the lecture hall and out to the review space.

A vertical void arrives at an expanded horizontal space, generating a series of complex relationships between the spaces for making and those for reflecting.



50. Section B, 1:500



51. **Perspective 6**  
The studios on the fourth floor and the review space below are defined by the undulating structure above and below and the existing brick building at the centre.

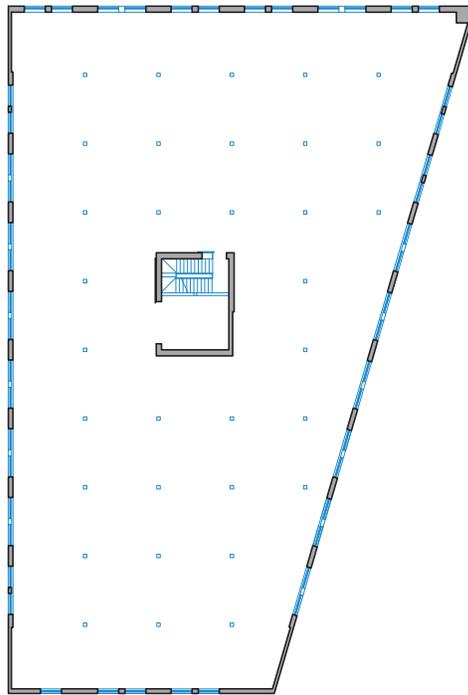




- 1. Sunken Court
- 2. Workshop – assembly
- 7. Spray Booth
- 18. Security Office
- 25. Administrative Staff Offices
- 29. Seminar/Meeting Rooms
- 30. Faculty Offices
- 31. Review Space
- 32. Lecture Hall
- 35. Kitchenette
- 36. Student Lounge
- 37. Graduate Offices
- 38. Undergraduate Studios
- 39. Roof Terrace

52. Fourth Floor Plan, 1:500





53. Existing Fourth Floor Plan, 1:500



54. Existing Section D, 1:500

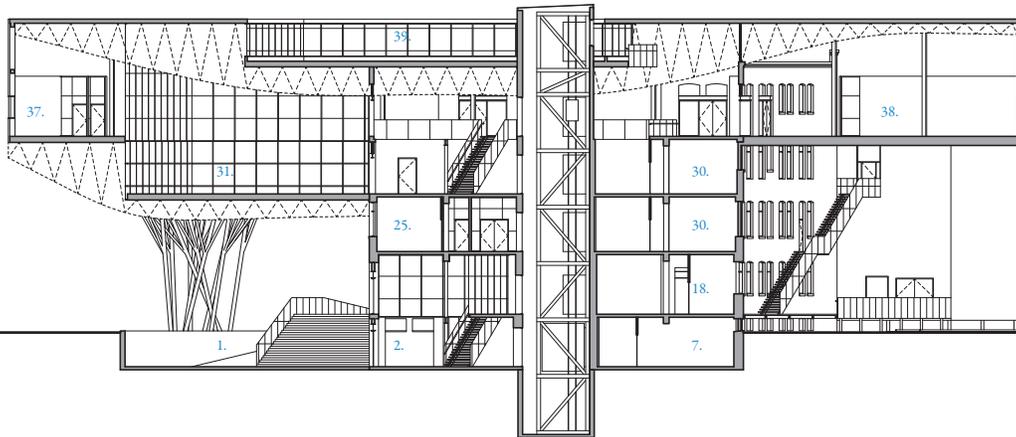


## Practice

The studio wraps around the review space below. This set of spaces replicate the one created directly beneath it, at the base of the school. The central circulation connects these sets of creation-display spaces. It opens to a familiar spatial relationship at the bottom and at the top.

The sequence of spaces within the school offers a pattern of work, one that oscillates between making and reflecting. The school and surrounding landscape are filled with installations – the products of this cyclical creative process – that temporarily modify the spaces they occupy. They perch on platforms or nestle within the recently harvested research crops; hang from the structure above the sunken court or throughout the school; wedge into the open space of the elevator core or position themselves in the generous circulation space that moves through the school.

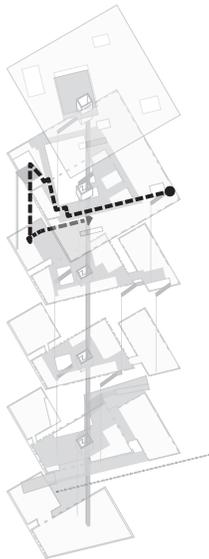
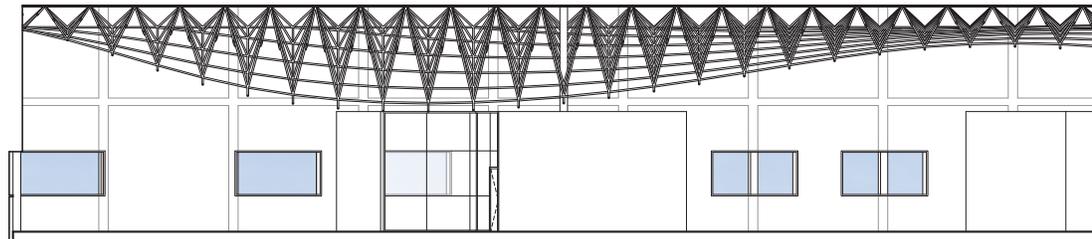
Architectural education is characterized by repetition; by cycles of iterations within projects within years. It is not a static repetition, like the grid cast over the prairie landscape, but a transformation through repetition. It is a layering of cycles.



55. Section D, 1:500

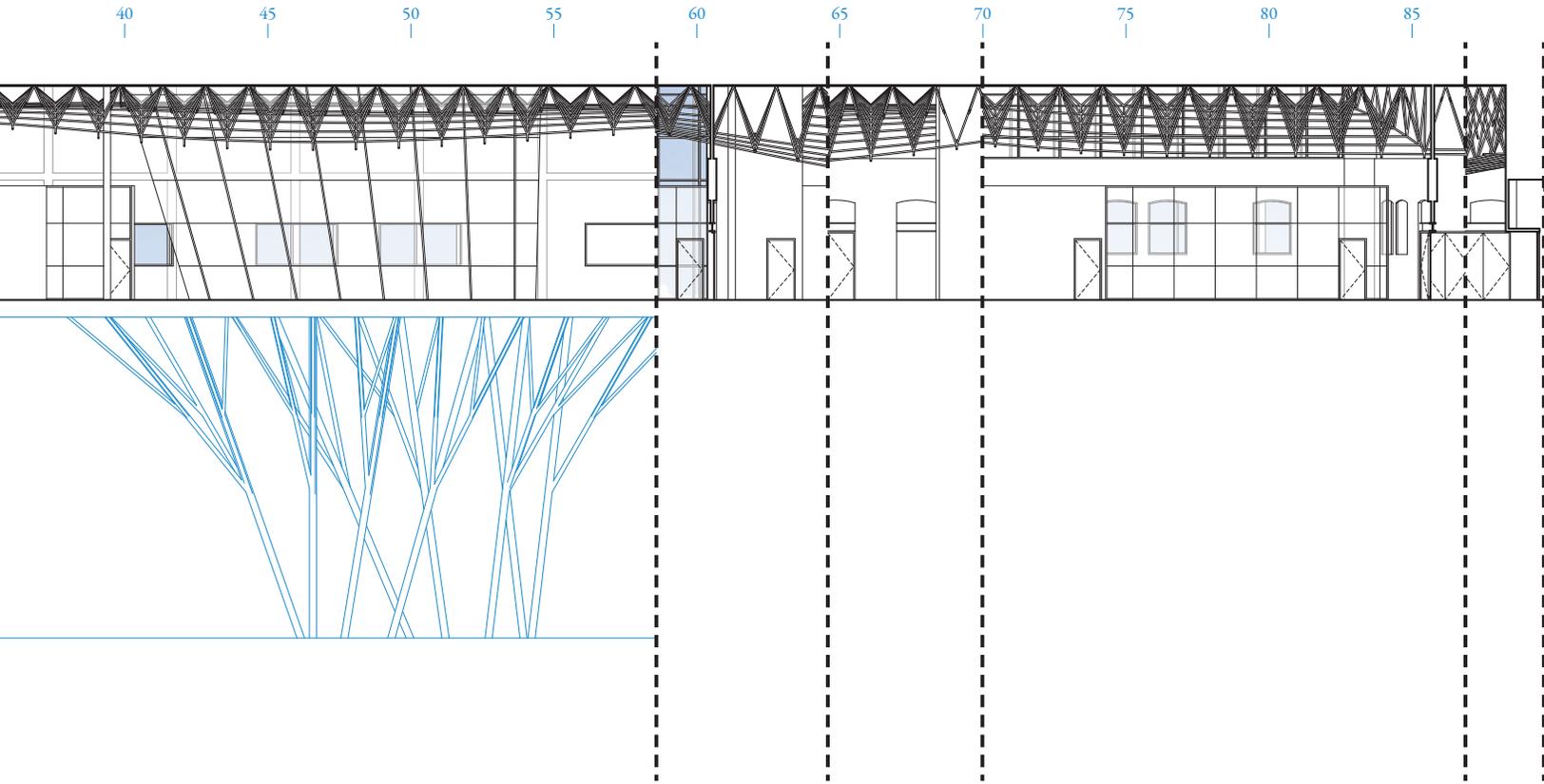


Six

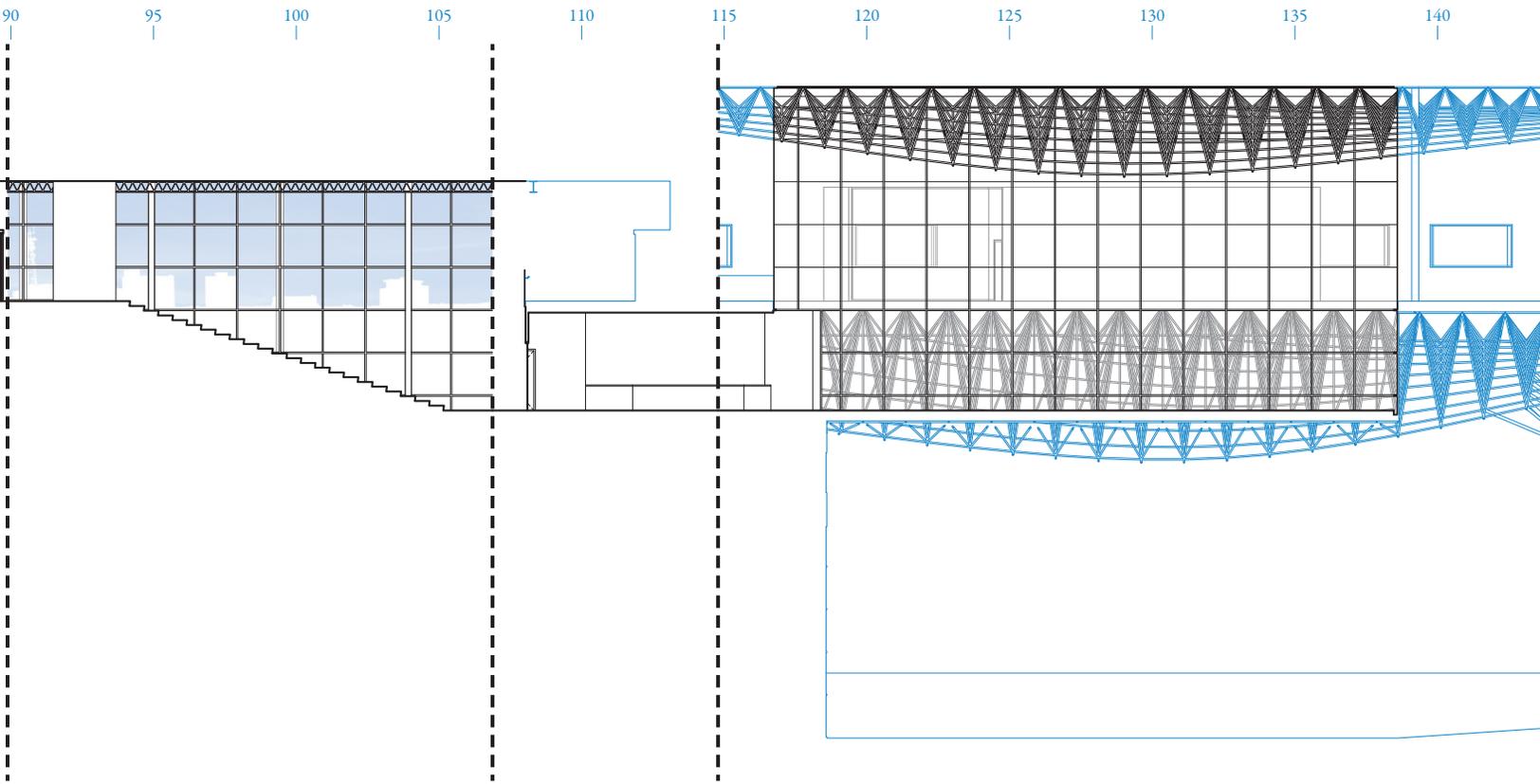


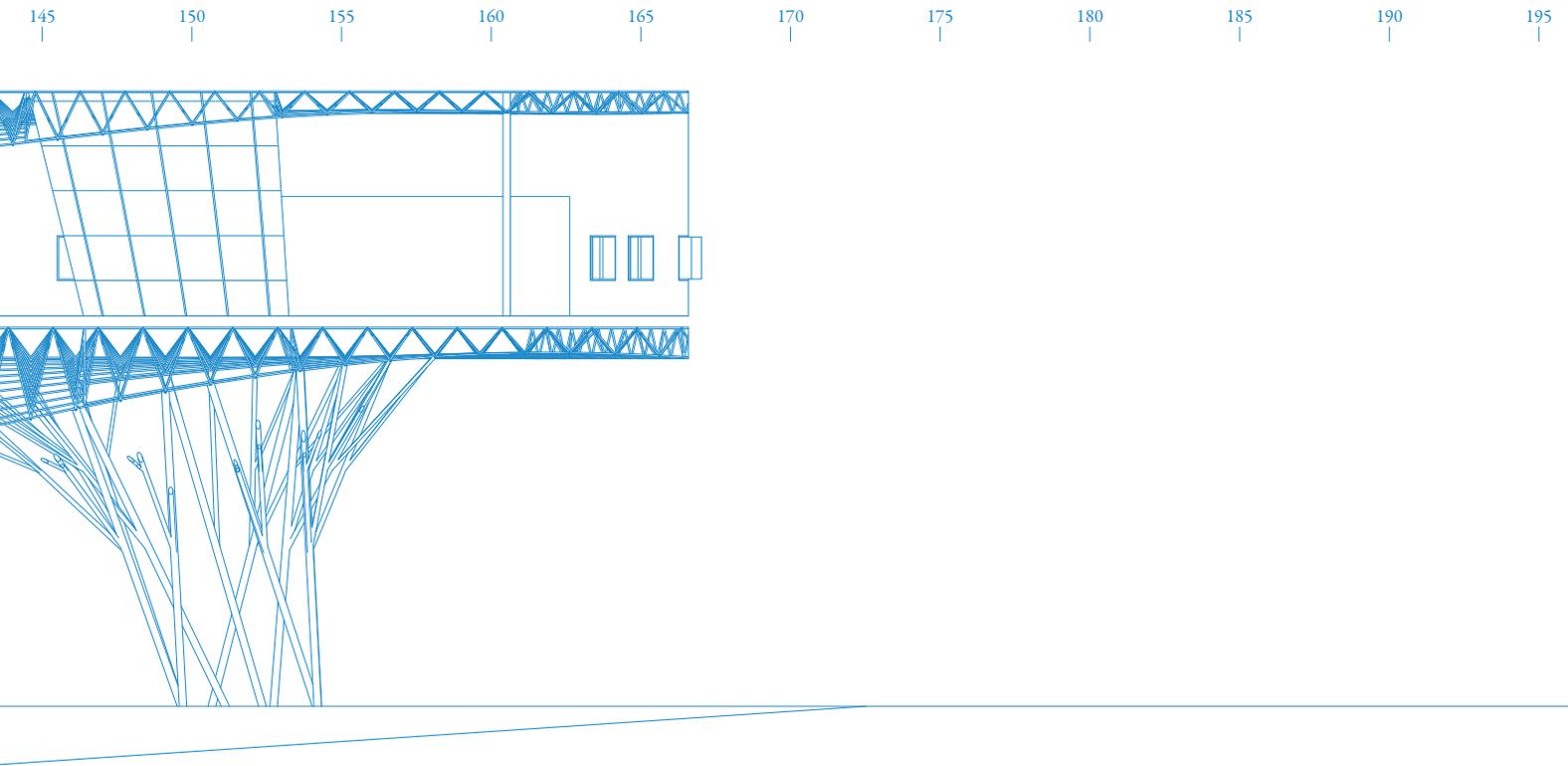
56. Unfolded Section: Reasoning, 1:250

## Reasoning



The studios are framed within a square, which in turn frame the review space below. Divisions in the vast horizontal space are fluctuating, suggested by the existing building at the centre, the graduate offices distributed throughout and the undulating structure above. The small studios that occupy these suggested spaces define their own limits.

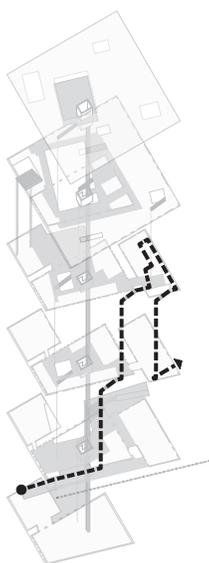
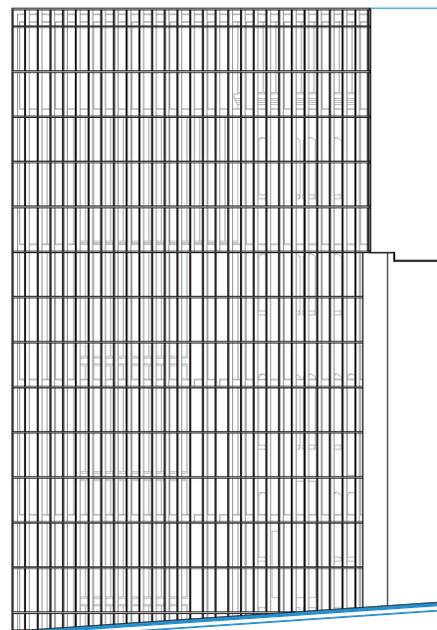




The steel structure that unifies the fourth floor also creates difference in the vast horizontal space. It continues across the threshold of the existing brick building, but ceases as you enter into the lecture hall. Here, the south wall opens up to the city centre. At the end of a slow descent, a set of large doors open out to the review space and you are reunited with the undulating structure. In front of you, another space frame filters your view to the north.

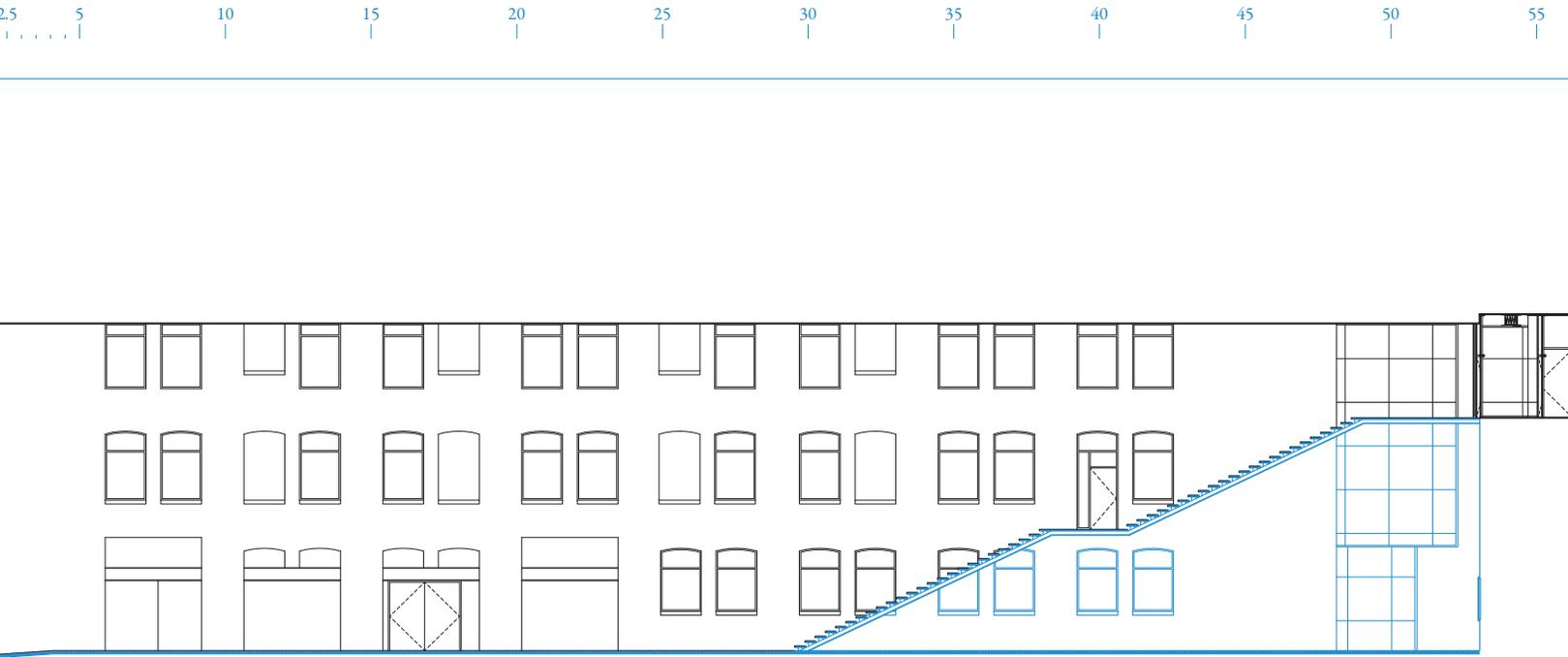
The building references itself and its surroundings as you move through it; it reinforces your location within it. To recall Krauss's essay, "the grid operates from the work of art outward, compelling our acknowledgement of a world beyond the frame."<sup>1</sup>

50 | 45 | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 2.5 | 0 | (m)



57. Unfolded Section: The Dream, 1:250

## The Dream

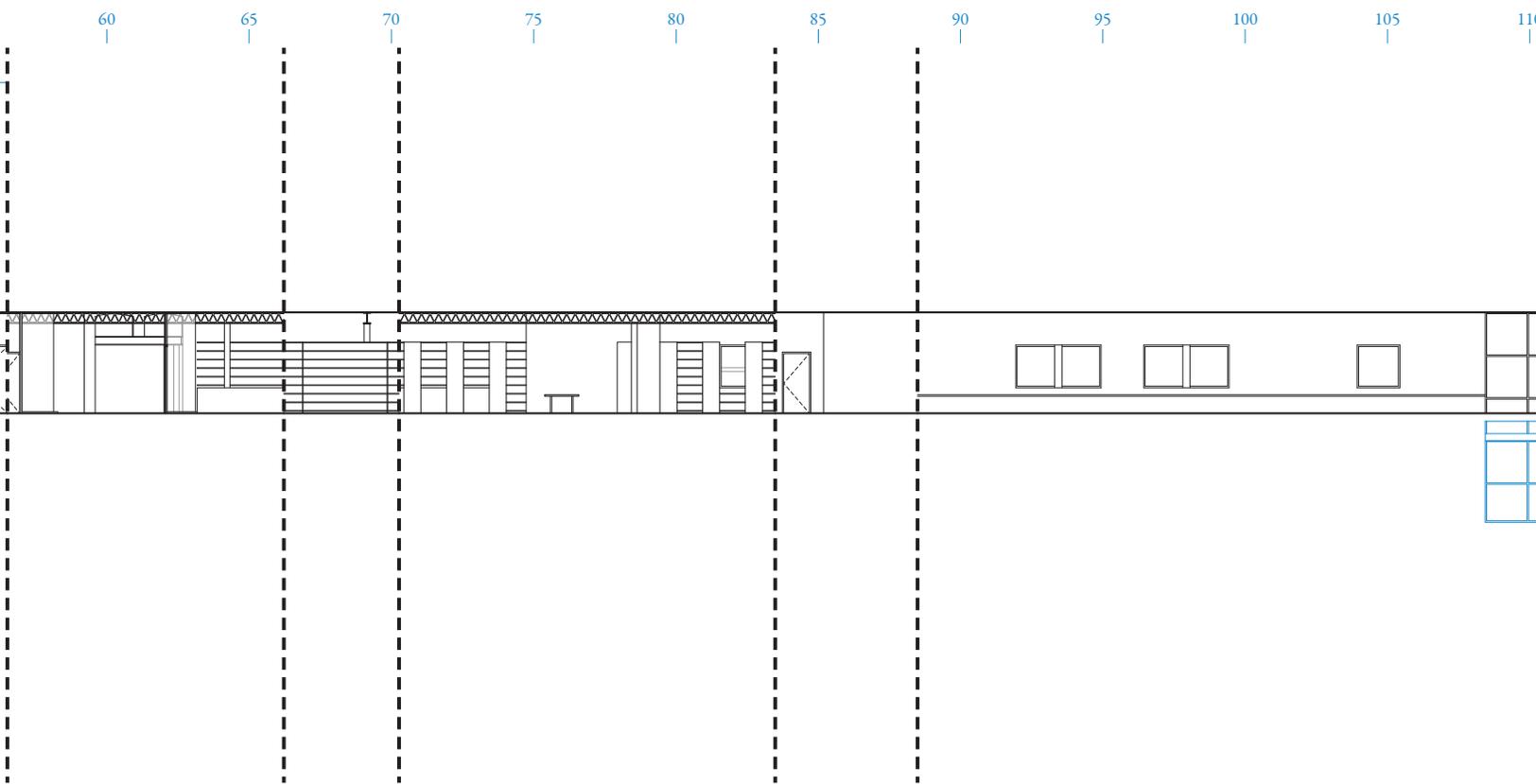


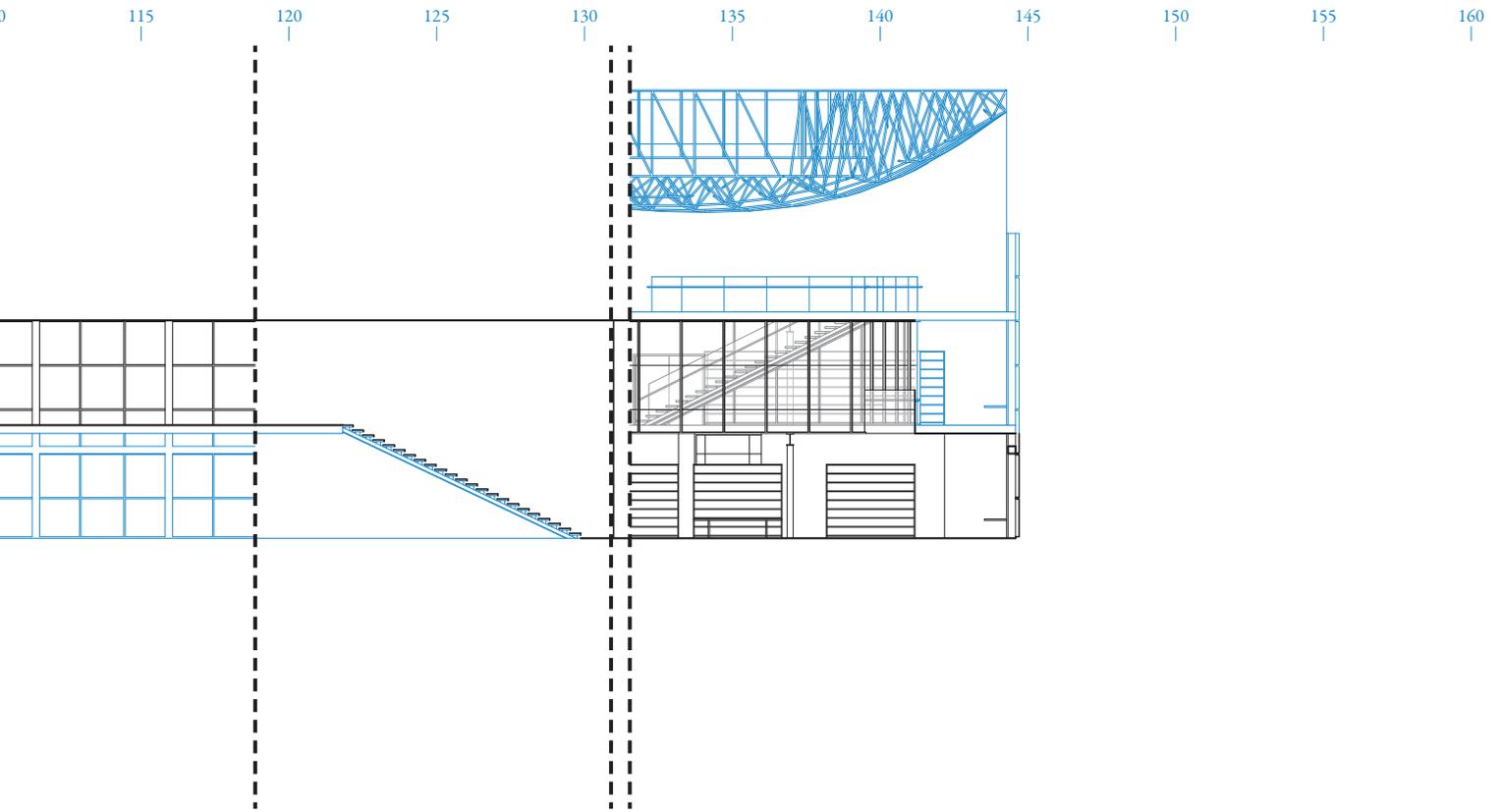
To unlearn is more difficult than to learn; and it seems that the task of breaking up rigid cognitive structures and reassembling them into a new synthesis cannot, as a rule, be performed in the full daylight of the conscious, rational mind. It can only be done by reverting to those more fluid, less committed and specialized forms of thinking which normally operate in the twilight zones of awareness.

Koestler, *The Ghost in the Machine*, 179.

The prolonged entry sequence separates you from the earth and draws you away from the city. At the top of a slow ramp, the fourth floor extends to shelter you. You walk along the existing brick façade, following a path forged by the railway tracks that measure out equal increments on the earth beside you.

Just past the main entrance to the school, a set of exterior stairs rise up and to the north. You approach the library, drifting farther from the city; from the earth; from measured time. At this elevated position, you enter the building and a view of the horizon opens up to you.

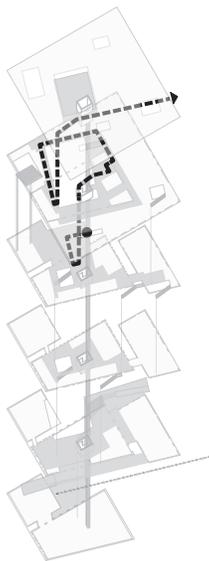
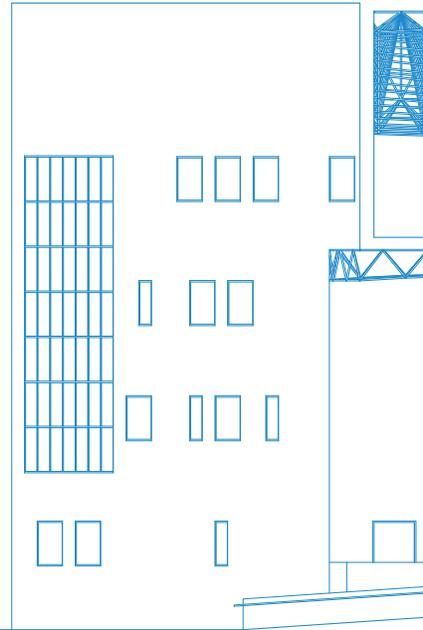




Framed views to the immeasurable northern landscape contrast the individual scale of the library. Only briefly, the northern wall dissolves simultaneously with the ceiling and the library joins with the landscape and the studio.

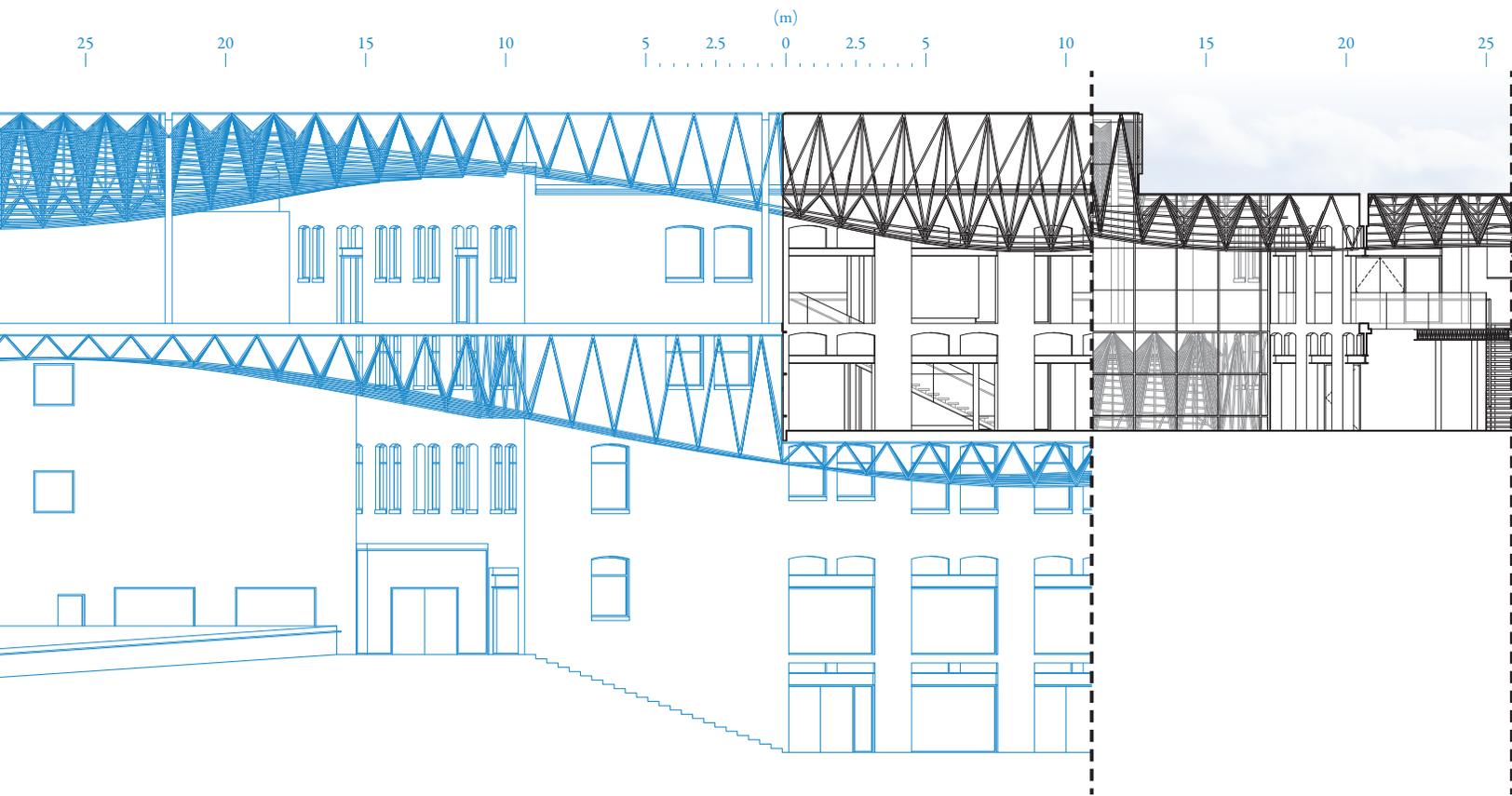
In your removal from the grid, or in its fluctuation, the logic-trapped mind slips into a state of daydreaming.

80 | 75 | 70 | 65 | 60 | 55 | 50 | 45 | 40 | 35 | 30



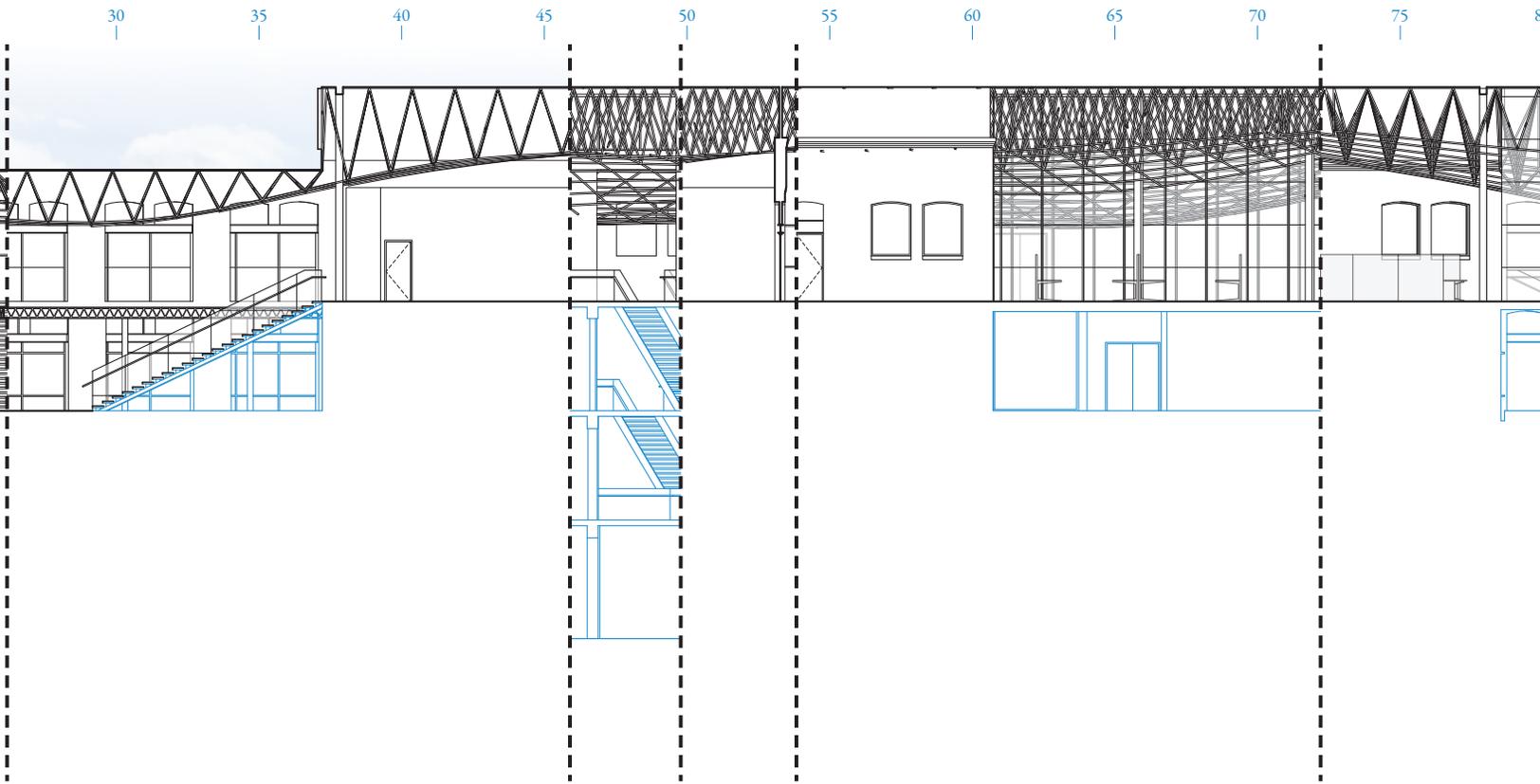
58. Unfolded Section: Horizon, 1:250

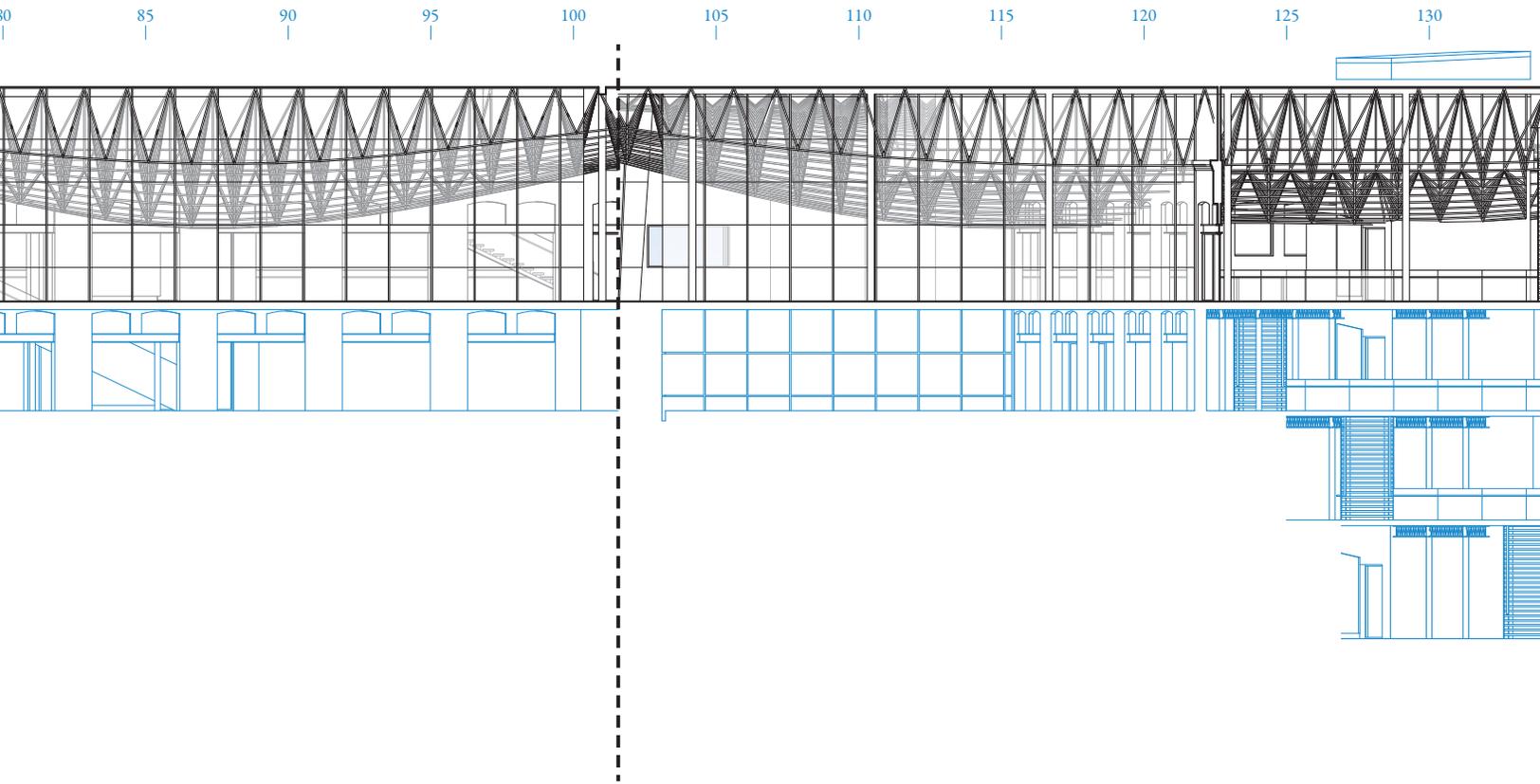
## Horizon

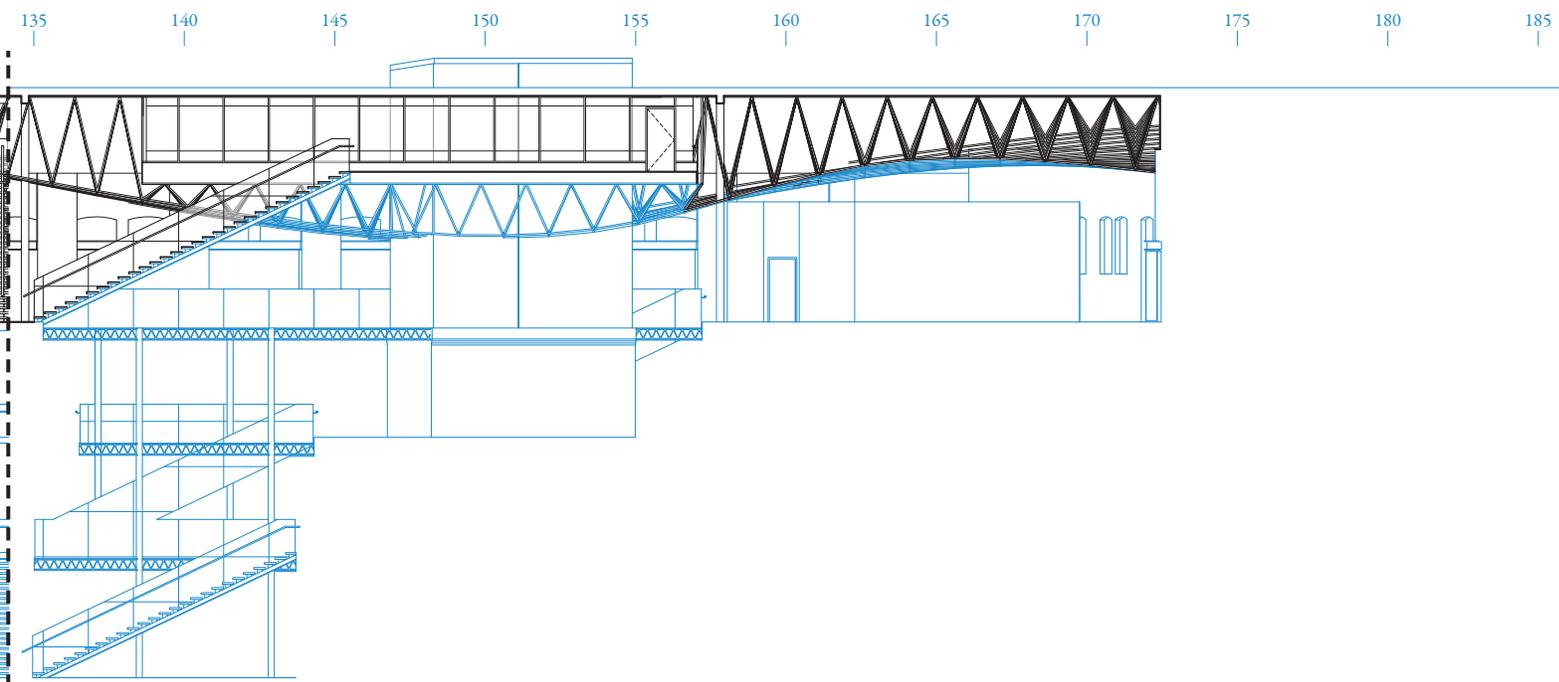


The undulating ceiling swells and recedes above you, the lines of its structure shifting, as you walk the circuit around the studio level. Beyond the studio desks, the perimeter of the space reveals glimpses of the horizon. The orienting brick structure at the centre conceals an opening to the lower strata of the building.

From this expanded horizontal space of the fourth floor – the school's horizon – you can descend down, like into the fertile primordial waters and then return to this space under the sky-structure; or you can ascend up, through the structure to a space where nothing exists but the roof on which you stand, the walls and the immense prairie sky that they frame.







190  
|

195  
|

200  
|

205  
|

210  
|

215  
|

220  
|

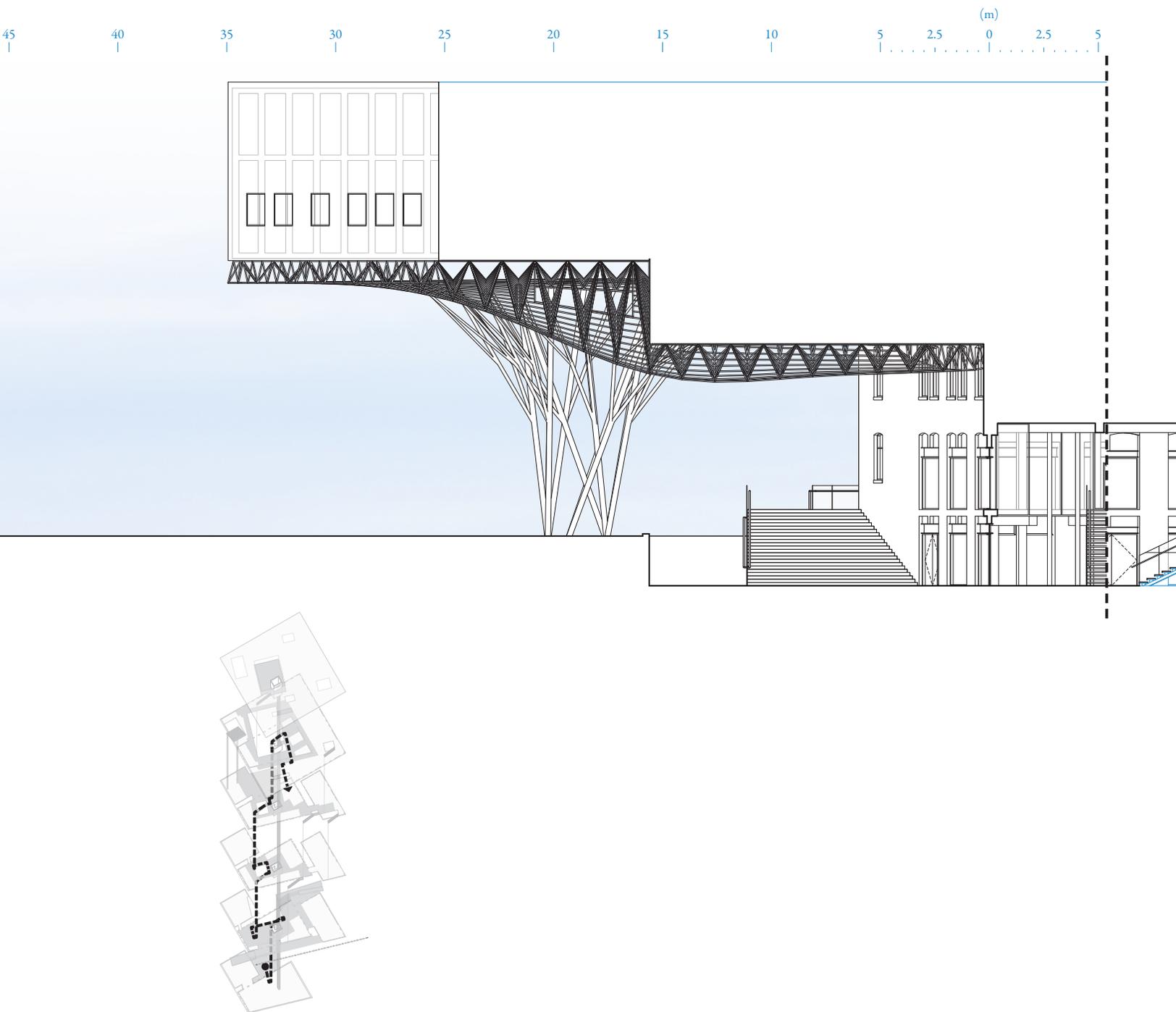
225  
|

230  
|

235  
|

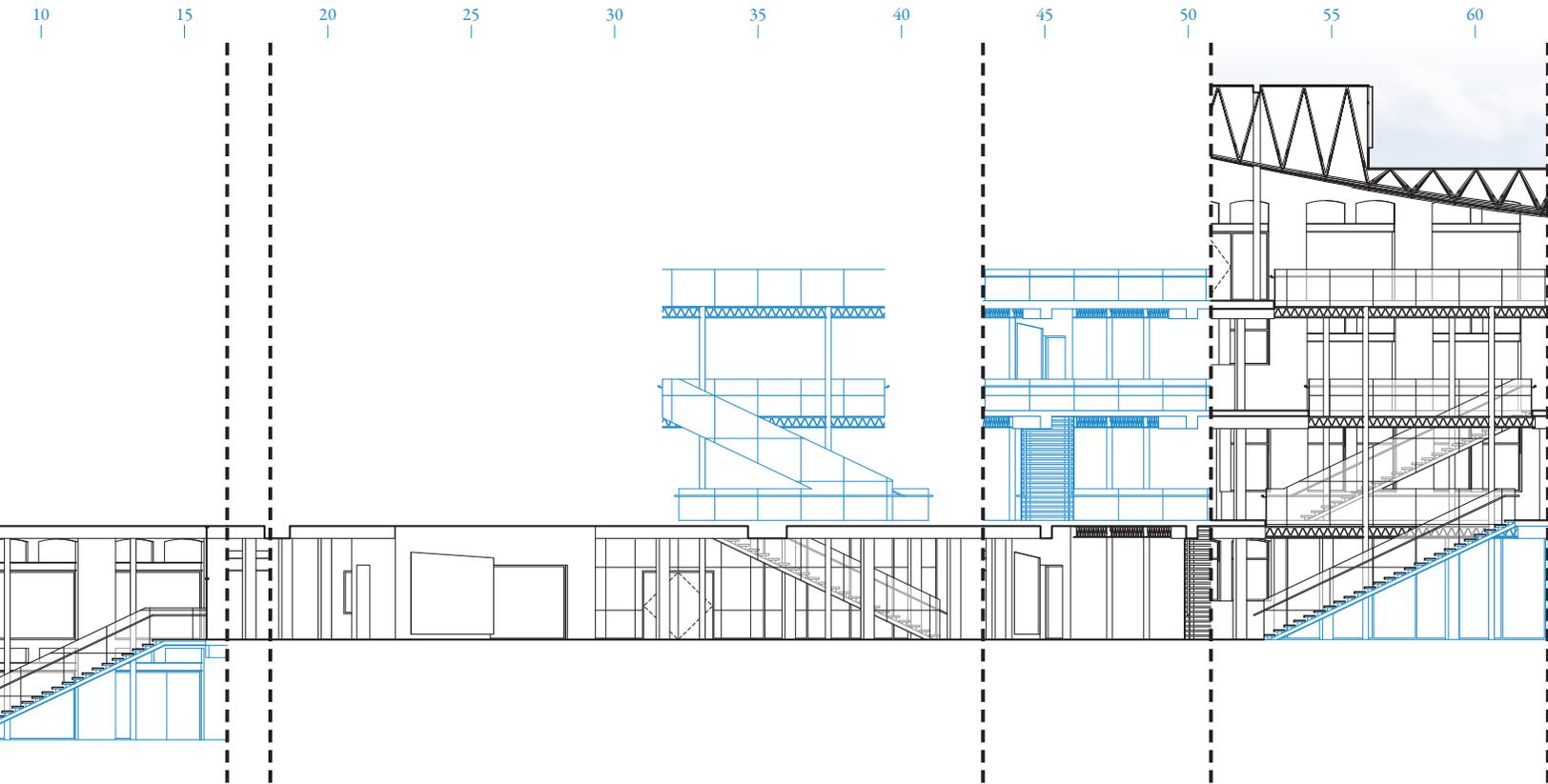
240  
|





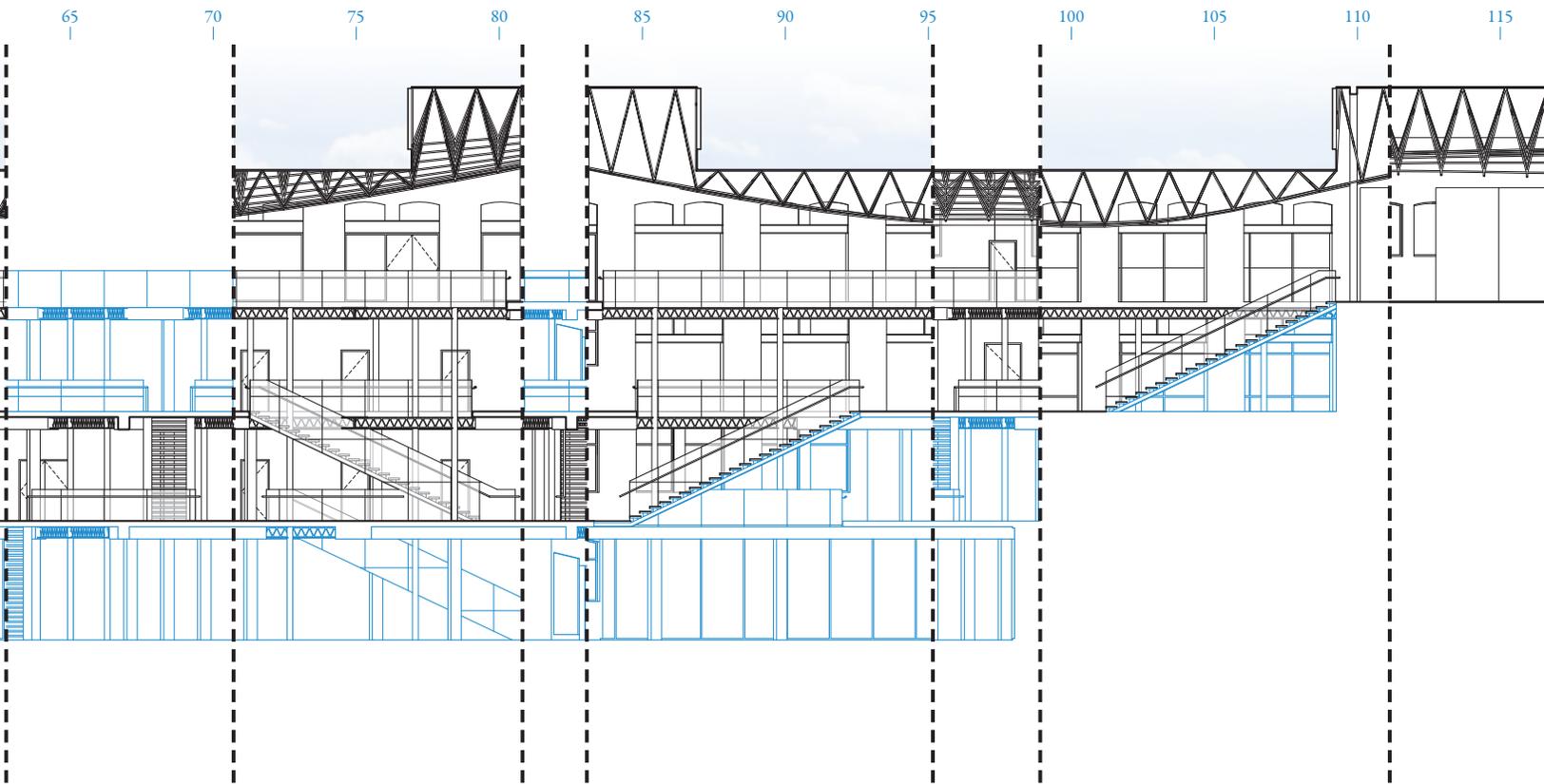
59. Unfolded Section: Diurnal Cycle, 1:250

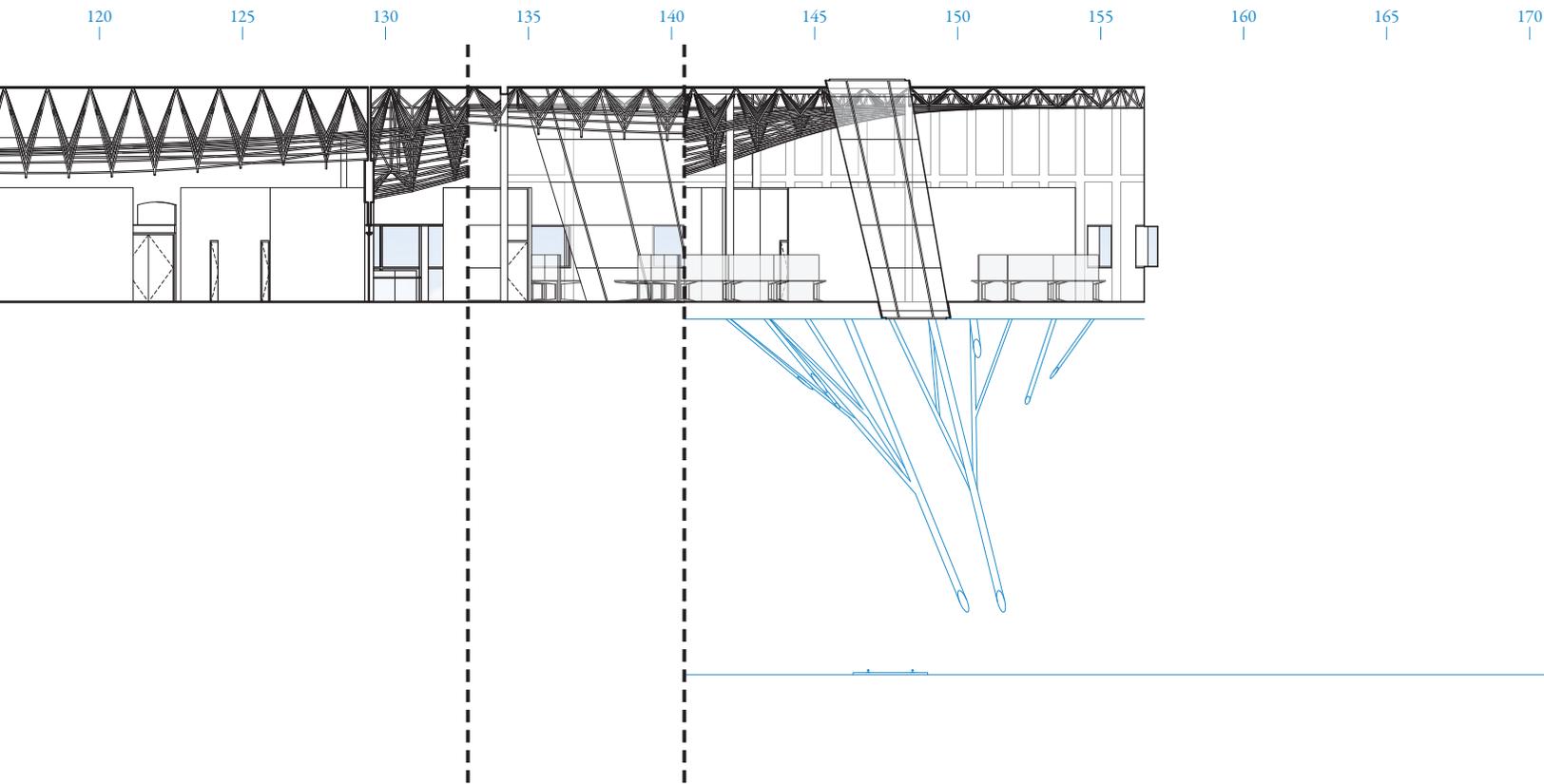
## Diurnal Cycle



The path through the centre circulation of the building, beginning in the sunken court and ending in the studio is characterized by the repeated expansion and compression of space. It begins with a transition from sky to structure, from structure to a double-height space within the workshop, and from there to a single storey at the first floor. At last, you perceive a void rising through the centre of the building.

As you ascend, removed from the outside world, moving against the geometry of the square, a cycle develops in relation to the void: awareness of the void beyond, expansion as you enter the void, then compression upon exiting. In this fluctuating space, the rhythm of your feet on the stair treads is a subtle reminder of the measured passing of time. The unvarying elevator core orients you within the space.





At the top of the void, you move away from the centre. The structure above you swells and recedes as you move horizontally, now, across the fourth floor. Towards the edge of the studio, a light-well punctures through the space. The synthetic sky fuses with the real; the sun measures the day across the floor; through a tangled collection of columns, the solid earth lies below. You are once again connected with the sky, the earth, and the horizon.



## Notes

### Earth

1. Chevalier and Gheerbrant, *Dictionary of Symbols*, 758.
2. Higgins, *Grid Book*, 57.
3. Higgins, *Grid Book*, 58.
4. Rykwert, *Idea of a Town*, 91.
5. Rykwert, *Idea of a Town*, 98.
6. O'Connell, *Illustrated Encyclopedia of Signs & Symbols*, 32.
7. Leeming, *Creation Myths of the World*, 336.

### Sky

1. Chevalier and Gheerbrant, *Dictionary of Symbols*, 601.
2. O'Connell, *Illustrated Encyclopedia of Signs & Symbols*, 115.
3. Koestler, *Ghost in the Machine*, 103.

### Horizon

1. O'Connell, *Illustrated Encyclopedia of Signs & Symbols*, 193.
2. O'Connell, *Illustrated Encyclopedia of Signs & Symbols*, 107.
3. O'Connell, *Illustrated Encyclopedia of Signs & Symbols*, 32.
4. Chevalier and Gheerbrant, *Dictionary of Symbols*, 811.

### Diurnal Cycle

1. Erdos and Ortiz, "Walks-All-Over-the-Sky," 136-39.
2. Erdos and Ortiz, "Sun Teaches Veeho a Lesson," 162-63.
3. Erdos and Ortiz, "Earth Making," 106.
4. Erdos and Ortiz, "Grandmother Spider Steals the Sun," 154-55.
5. Erdos and Ortiz, "Coyote Steals the Sun and Moon," 140-42.
6. Richard Kroeker recalling conversations with Mi'kmaq elders (lecture, University of Waterloo, Cambridge, ON, December 13, 2011).

### Geomorphology

1. *Encyclopedia of Saskatchewan*, s.v. "Western Canada Sedimentary Basin," by Laurence Vigrass, accessed March 26, 2012, [http://esask.uregina.ca/entry/western\\_canada\\_sedimentary\\_basin.html](http://esask.uregina.ca/entry/western_canada_sedimentary_basin.html).
2. Acton et al., *Ecoregions of Saskatchewan*, 119.
3. Lemmen et al., *Geomorphic Systems*, 16.
4. *Encyclopedia of Saskatchewan*, s.v. "Proglacial Lakes," by Janis Dale, accessed March 26, 2012, [http://esask.uregina.ca/entry/proglacial\\_lakes.html](http://esask.uregina.ca/entry/proglacial_lakes.html).
5. Lemmen et al., *Geomorphic Systems*, 15.
6. Lemmen et al., *Geomorphic Systems*, 40.
7. Lemmen et al., *Geomorphic Systems*, 15.
8. *Encyclopedia of Saskatchewan*, s.v. "Proglacial Lakes," by Janis Dale, accessed

March 26, 2012, [http://esask.uregina.ca/entry/proglacial\\_lakes.html](http://esask.uregina.ca/entry/proglacial_lakes.html).

9. Lemmen et al., *Geomorphic Systems*, 3.

#### Primordial Waters

1. Leeming, *Creation Myths of the World*, 341.

#### Settlement

1. Kerr and Hanson, *Saskatoon*, xxiii.
2. Kerr and Hanson, *Saskatoon*, 39.
3. Rees, *New and Naked Land*, 160.

#### Movement

1. Rykwert, *Idea of a Town*, 172.
2. Author, *Meewasin Valley Project*, 20.
3. Author, *Brave Heritage*, 47.
4. Author, *Meewasin Valley Project*, 20.

#### Subsistence

1. Rykwert, *Idea of a Town*, 132.
2. Chevalier and Gheerbrant, *Dictionary of Symbols*, 9.
3. Lemmen et al., *Geomorphic Systems*, 6.

#### The City

1. Kerr and Hanson, *Saskatoon*, xxiii.
2. Kerr and Hanson, *Saskatoon*, 30.
3. Kerr and Hanson, *Saskatoon*, 36.
4. Kerr and Hanson, *Saskatoon*, 69.
5. City of Saskatoon, *Warehouse District*, 71.
6. Kerr and Hanson, *Saskatoon*, xiii.
7. Kerr and Hanson, *Saskatoon*, 69.

#### The Train

1. Kerr and Hanson, *Saskatoon*, 39.

#### Duration

1. Kerr and Hanson, *Saskatoon*, 6.

#### Reasoning

1. Krauss, "Grids," 18.





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