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Spring 2017

## reCONNECT: Amplifying Circulation Typologies to Radically Rethink Urban-Aqueous Relationships

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# *reCONNECT:*

*amplifying circulation typologies to radically  
rethink urban-aqueous relationships*

*Tiffany Pau*



## Acknowledgements

*To my advisor, Molly Hunker, for not just being an incredible advisor for thesis, but beyond that- to remind me that it's good to get out of my comfort zone, to take risks, and to trust myself with designing again after a fairly tumultuous relationship with architecture school.*

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*To my model assistant, Evan Ginsburg, for helping me construct my final model and keeping me sane along the way.*

*To all my friends, but especially Jon Anthony for his constant feedback and Taylor Hagan for boosting morale even in the wee hours of the night.*

*To my parents, my number one fans, the ones who have always loved and supported me despite all the struggles and self-doubt it took to cross the finish line, there's no one else I'd rather have by my side; I love you.*

*And finally to my grandfather, who always encouraged me to pursue my dreams, even if he didn't live to see me achieve them. I hope I made you proud; this year was for you.*

**Tiffany Pau**

*Thesis Spring 2017*

*Primary Advisor: Molly Hunker*

*Committee Advisors: Lindsay Harkema, Julia Czerniak*

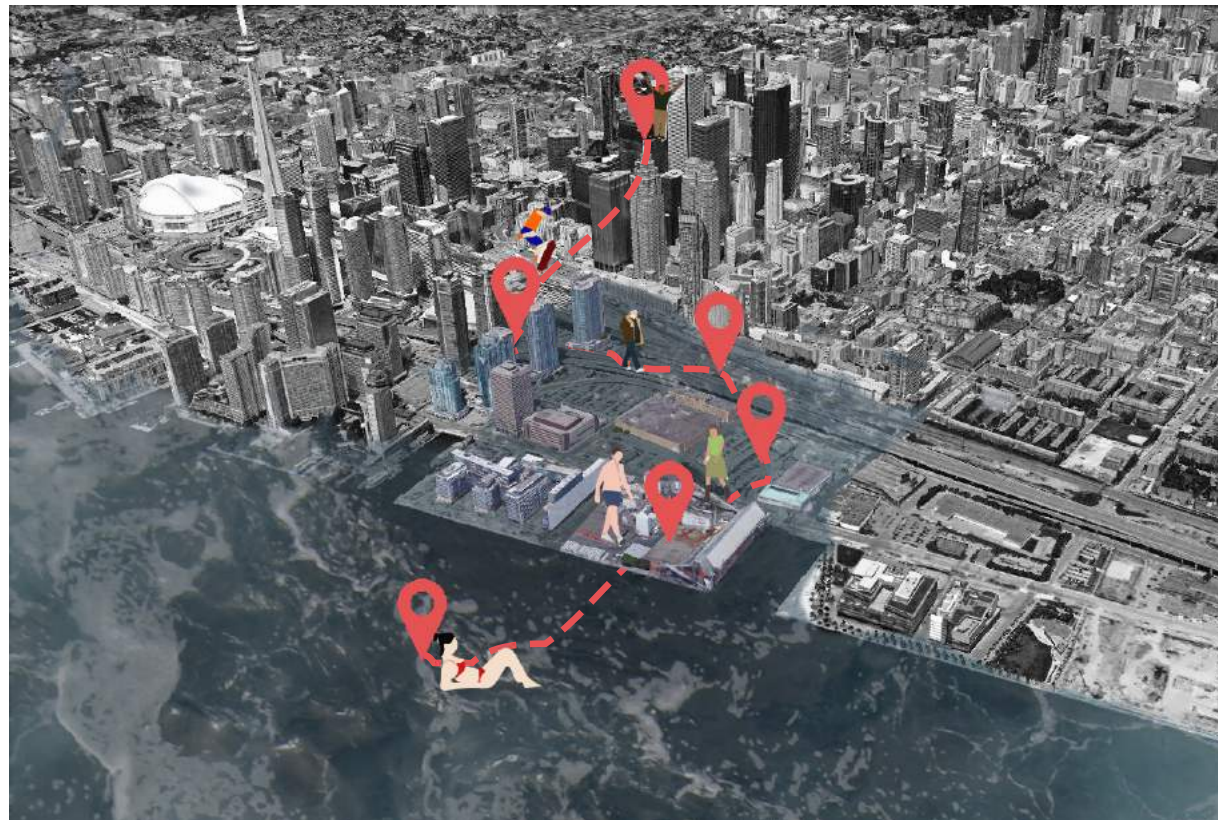
*Syracuse University School of Architecture*

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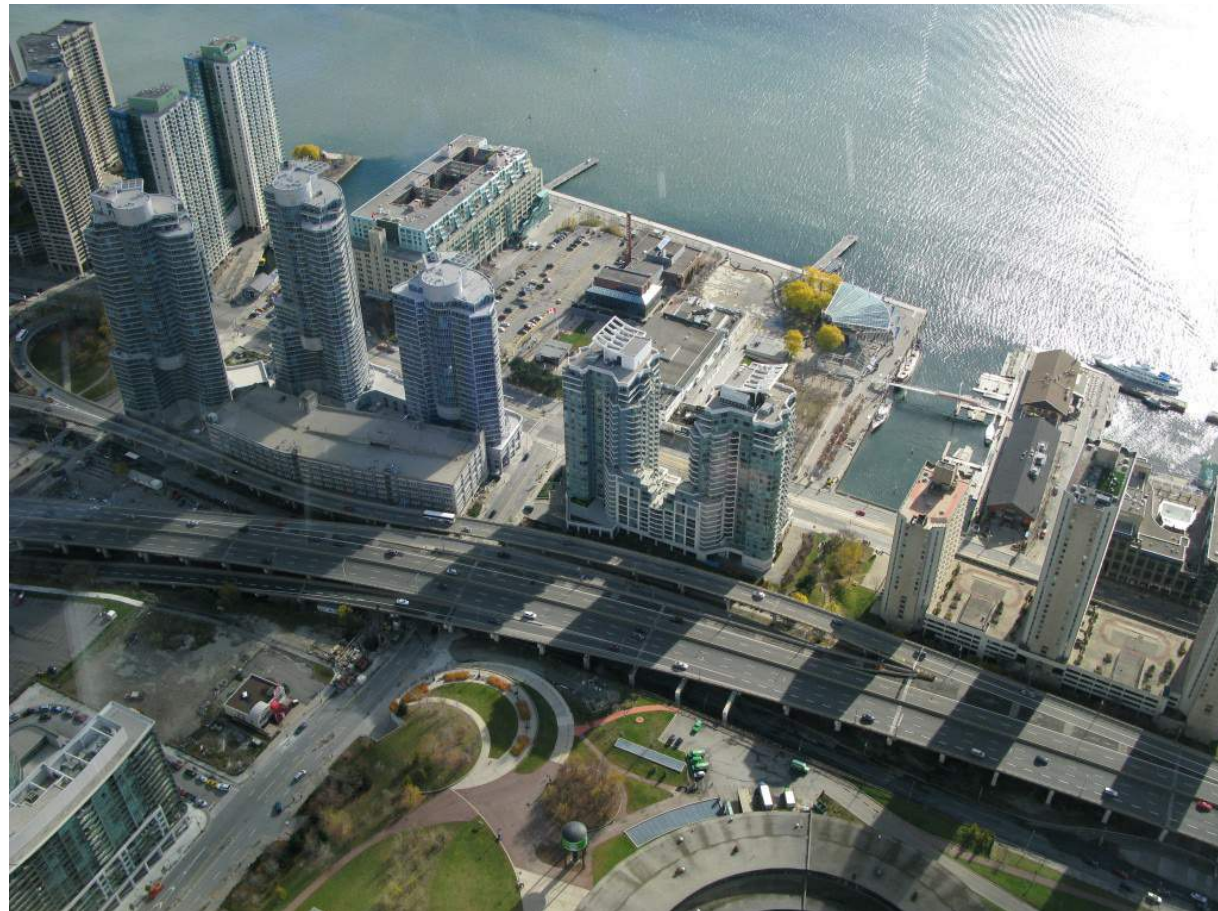
*"If the goal is to create a place where people want to stay,  
first create a place where people want to go."*





## CONTENTION

This thesis proposes a radical rethinking of city-water relationships to leverage existing infrastructural and architectural divides; because it holds great architectural and social value to work within and challenge existing systems, and because access to the waterfront— for sustenance, transportation, commercial, or leisure purposes— is a core human need. The project questions what happens when connections are scaled extra-large, yet aim to maintain the qualities that are imbued within them at the micro scale to generate increased public activity at the water's edge. It looks to create a new type of urbanism, one that prioritizes the very act of circulation as a vital urban condition and not merely as a by-product of navigating the built world.



*The Gardiner Expressway directly below the CN Tower // photographed by Nayu Kim  
Toronto, Canada*

## HISTORY + PRECEDENTS

It was Jane Jacobs who once wrote that “The waterfront isn’t just something unto itself; it’s connected to everything else.” And indeed, one can see how it is a vital part of the city from its beginnings as a means of irrigation to humble trading port to prime real estate for developers. Bonnie Fischer, together with Beth Benson and the Urban Land Institute, would certainly agree, arguing that “if access to water was long essential for sustenance, transportation, commerce, and industry, it is now necessary for less tangible though hardly less important human needs.” Human needs are the core motivation to this thesis as the intent for generating a new urbanism is to encourage active public presence in a part of the city that was previously obstructed to them.

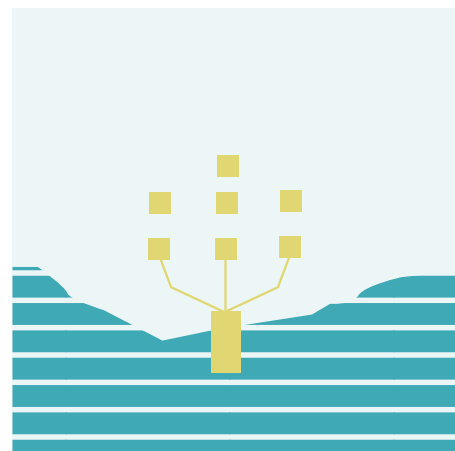
So how did such a vital part of the urban fabric become so neglected? The answer in part, can be found in the divisions that exist throughout the built environment.

*“If access to water was long essential for sustenance, transportation, commerce, and industry, it is now necessary for less tangible though hardly less important human needs.”*

- Remaking the Urban Waterfront, 45

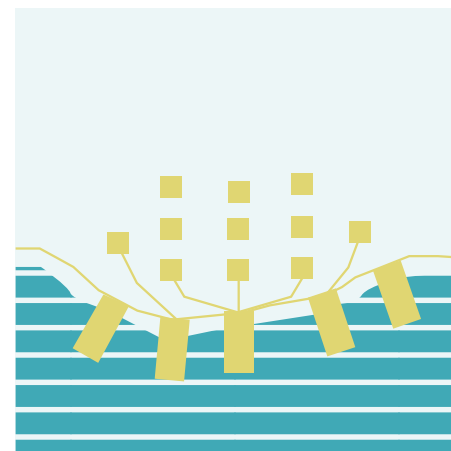
## PATTERN OF WATERFRONT DEVELOPMENT

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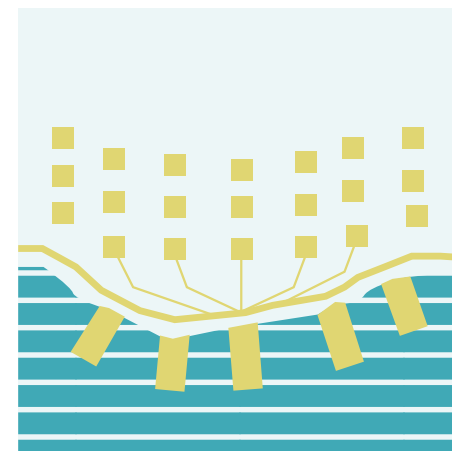
### SETTLEMENT

A harbour is established and the city's inhabitants begin to settle around the harbour.



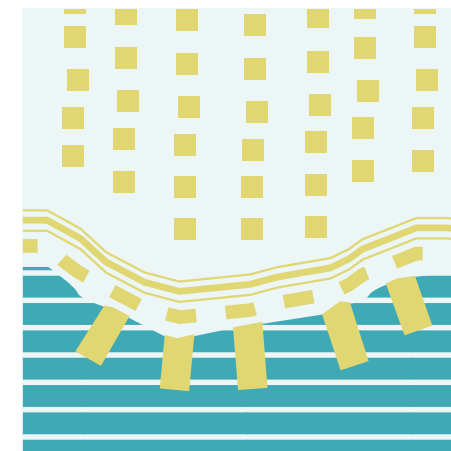
### A PORT IS ESTABLISHED

The settlement grows into a city and the harbour expands to include multiple docks to support trading increase.



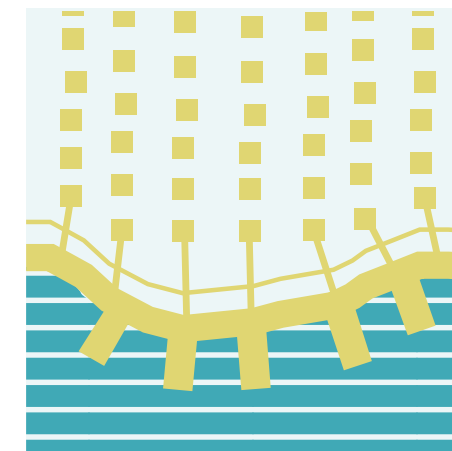
### CITY DETACHES

Industrialization takes hold and distance increases between city and shoreline as people try to avoid the smoke and fumes that come with factories.



### DECLINE

Shipping is no longer the primary mode of transportation for goods and people. Docks are gradually abandoned and the shoreline becomes an industrial wasteland.



### REDISCOVERY

Revitalization of the waterfront is seen as a desirable goal for both social and environmental reasons.



### PROPOSED:

**RECONNECT**  
*Architecture and planning actively create paths to reconnect the city to its waterfront.*





*Piazza San Marco // Venice, Italy*



*Grand Canal Square // Dublin, Ireland*



*Inderhavnsbro // Copenhagen, Denmark*

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## LEARNING FROM WATERFRONTS:

Waterfronts as a whole can be categorized into three types: informal, designed, and inaccessible.

The informal are generally historic waterfronts that appeared before the automobile, train, and skyscrapers became popular. As such they are useful to draw lessons from on how to attract people to waterfronts, but are missing the crucial elements of division that I am interested in bridging. On the other hand, the designed and inaccessible waterfronts do face these elements of division with the former being successful and the latter being unsuccessful. Here, success is measured by the amount of human activity the waterfront is able to generate. This will be a necessary measure by which my project will be judged against as the idea of connectivity rests on its users being able to traverse across the divide of city and water. If they can easily do so, that means strong connections have been made. If they cannot, the waterfront is still divided from the city and acts as a separate entity.

# Informal vs. Designed

What do we mean by an “informally occurring” waterfront? By this phrase, we are referring to a time before architects and urban planners had the idea to intentionally design the water’s edge; when certain waterfronts self-transitioned into an active public space without designer intervention.

ie.

- Nyhavn // Copenhagen, Denmark
- Ortaköy // Istanbul, Turkey
- Graslei // Ghent, Belgium
- Porto Ribeira // Porto, Portugal
- Kiyamachi River Walk // Kyoto, Japan
- Copacabana // Rio de Janeiro, Brazil

Their commonalities?

- Proximity to public squares that allow draws people from city center to water’s edge
- Emphasis on pedestrian/bike traffic as opposed to automobiles
- Provision of amenities (not just retail)
- Comfortable and secure atmosphere
- Strong cultural ties to the city (manifested both spatially and socially)

By contrast, a “designed” waterfront is one that has been intentionally designed by architects and urban planners to be a public space. It can either be a success or a failure. Below are examples of successfully designed waterfronts; on the opposite page are examples of failed or “inaccessible” waterfronts.

ie.

- Split Riva // Split, Croatia
- Chicago Riverwalk // Illinois, USA
- Main Beach Park + Heisler Park // California, USA
- Hunter’s Point // New York, USA
- Grand Canal Square // Dublin, Ireland
- St. Kilda // Victoria, Australia

# Inaccessible

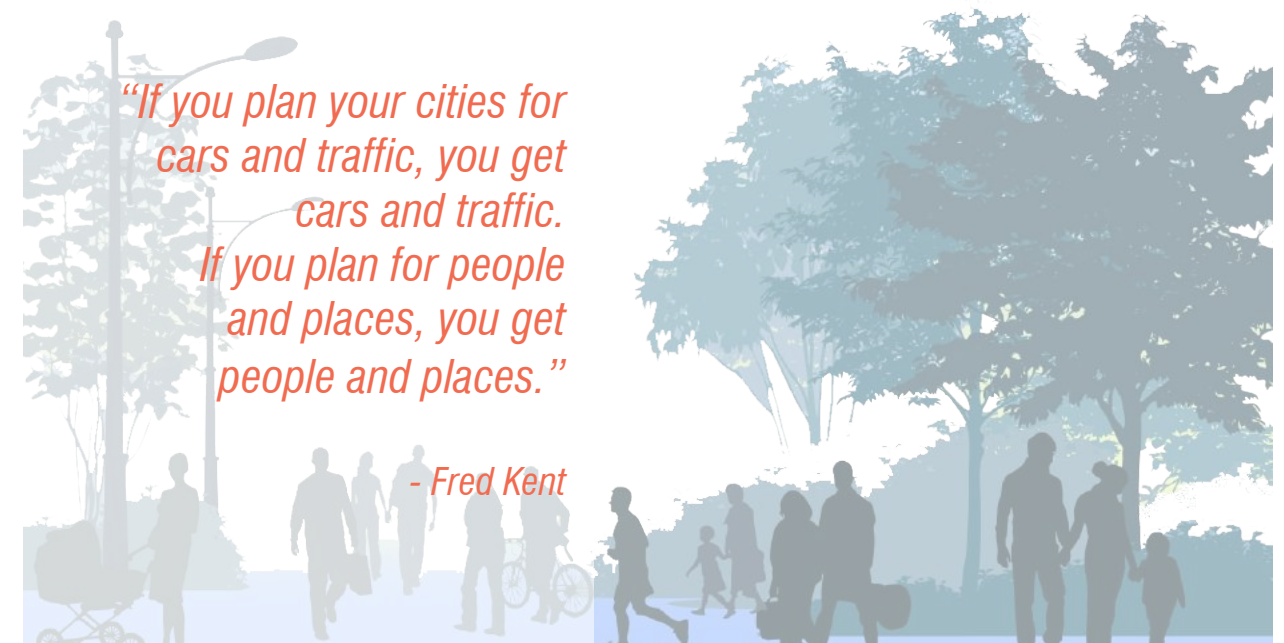
What do we mean by an “inaccessible” waterfront? By this phrase, we are referring to a waterfront that separates itself from the city and its inhabitants. This can take the form of spatial boundaries (highways, a wall of residential towers, lack of clear circulation) and/or social boundaries (a lack of activities, weak cultural identity, a feeling of unsafeness).

ie.

- Inderhavnsbro // Copenhagen, Denmark
- Hong Kong // Hong Kong Island
- Boston // Massachusetts, USA
- Seattle // Washington, USA
- Tokyo Bay // Tokyo, Japan
- Vancouver // British Columbia, Canada

Their commonalities?

- Flashy buildings that do little to give back to the public realm
- Emphasis on automobiles as opposed to pedestrian/bike traffic
- Little to no provision of amenities; just housing.
- Socially and spatially exclusionary atmosphere (tall residential towers suggest certain connotations about the people living there and block views)
- Weak cultural ties to the city







### [NYHAVN] COPENHAGEN, DENMARK

*Diagnosis: The nearby public square draws the public in and once there, a large host of amenities makes the waterfront a desirable place to be.*

The success of Nyhavn lies with the public square (really oval) next to it called Kongens Nytorv. It draws people from the city towards the waterfront and restaurants and picturesque views at Nyhavn keep the waterfront promenade bustling. Over time, the square has been developed to add more capabilities so that large public events and programs can be held there. This increases the overall waterfront social quality and its historical significance and preservation of original facades helps boost the cultural ties back to the city. Increasingly, social media and tourist photos have helped cement this waterfront as one of the major hotspots of Copenhagen's urban life.



### [PORTO RIBEIRA] PORTO, PORTUGAL

*Diagnosis: Major seaport successfully evolves into lively promenade through careful preservation of historic buildings and its natural location between two important public spaces.*

Once known as a major seaport, the Ribeira has evolved into a lively waterfront promenade while still encapsulating the medieval historic atmosphere. The Cais de Ribeira (raised embankment) acts as a connection between the Praça da Ribeira (Ribeira Square) and the Ponte de D. Luís I. thus creating a strong tie back to Porto's urban fabric. Its preservation of most of its historic buildings creates a charming atmosphere where people of all ages gather to play, eat, drink, and socialize.



### [ORTAKÖY SQUARE] ISTANBUL, TURKEY

*Diagnosis: The mosque and almost daily markets create a lively atmosphere that residents and tourists alike flock too.*

Since the mosque's completion in 1856, it has become a major attraction for people to naturally congregate at that site's aqueous edge. Over time, open air crafts markets and other shops have also popped up creating a public square that opens up to the waterfront.



### [KIYAMACHI RIVER WALK] KYOTO, JAPAN

*Diagnosis: The purpose of a waterfront can evolve with the times to suit the public's need.*

Takasegawa is actually a man-made canal commissioned by the merchant Suminokura Ryoi in the 1590s to help create a trading corridor where he could float lumber between Kiyamachi and Osaka. After 1868, it stopped being a trading commercial corridor and instead engaged in another type of trade: that of bars and restaurants. At first these were implemented to cater to the wealthy as Kiyamachi had slowly evolved into the second largest geisha quarter in Kyoto. Today, it caters to the student crowd and young salaried set. In the spring and fall, public performances are held in the old theater at the street's north end and all the shops hang red lanterns from their fronts hearkening back to traditional Japan.



### [GRASLEI] GHENT, BELGIUM

*Diagnosis: When there are two similar in function and highly utilized public spaces on either side of the waterfront, the prettier of the two will attract more people.*

Graslei has shown tremendous growth from being a simple merchant harbour to one of the locals' favourite spots for socializing and shopping. It is filled daily by teens sunbathing, children playing, couples strolling by, elderly feeding pigeons, and families enjoying meals at one of the several waterfront taverns. Across the Leie River is Korenlei which functions the same, but Graslei has the more spectacular backdrop of the two, which explains its popularity.



### [COPACABANA] RIO DE JANEIRO, BRAZIL

*Diagnosis: By creating more area for the waterfront, people took advantage of it and incorporated it into their daily beaching routines.*

In the 1970s, landfill was added to the beach area primarily to extend sewers and to provide a larger buffer zone between the sea and the houses. By doing so, they unintentionally created a large promenade. Taking inspiration from 19th century Portuguese pavements, landscape architect Roberto Burle Marx created the iconic black and white wave pattern mosaic pavement. Over the years, this has helped attract more visitors to the beach, and local amenities have also popped up to support an ever increasing waterfront population.

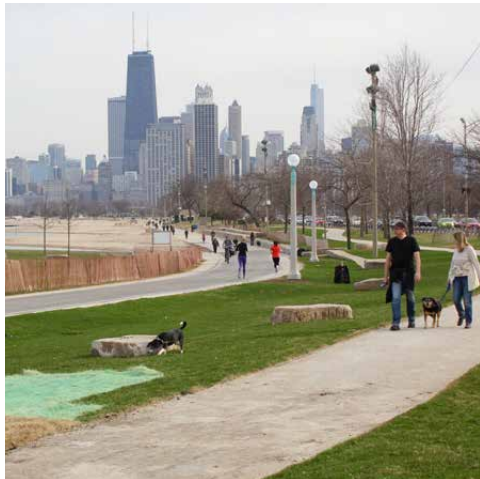




### [SPLIT RIVA] SPLIT, CROATIA

*Diagnosis: A strong people watching culture encouraged a simple yet large-impact revitalization of Split's Riva.*

In the Mediterranean, coastal towns like Split are prized for their 'Rivas', or waterfronts. Split's waterfront dates back to 1st century BC in the time of Diocletian, but industrialization and neglect had taken its toll and it was only in 2007 that a huge restoration was undertaken to recreate Split's prized public space. For the Croats, the Riva's success is highly dependent on people so efforts were made to make the area hospitable to its inhabitants again. Cafés, pop up stands, and highly designed benches were reintroduced with the benches being the most key. Croatian culture revolves around people watching and people treat it as the birthplace of all social interaction- at any time, the right business deals can be struck or your soul mate could be found. It's all just a matter of serendipity.



### [LAKEFRONT TRAIL] ILLINOIS, USA

*Diagnosis: Good planning and strict zoning laws have allowed Chicago's expansive shoreline to beautifully spawn almost the entire city from end to end adding a richness to the urban fabric that would have otherwise be dominated by a series of high rises.*

Possibly one of the largest developed waterfronts in the world, Chicago's Lakefront Trail is an impressive eighteen miles that connects several lakefront neighbourhoods together, each with their own distinctive character and skyline. Along the way are museums, zoos, playgrounds, recreation centers, boardwalks, nature sanctuaries, and boat harbours for one to experience either by foot, bike, or rollerblade.



### [MAIN BEACH PARK + HEISLER PARK] CALIFORNIA, USA

*Diagnosis: It is possible to create a successful waterfront even if it is near a highway provided that the highway is not elevated, and thus connections to and from the water's edge can be made.*

Despite the Pacific Coast Highway dividing city from waterfront, Main Beach Park has managed to breach the insurmountable barrier and connect pedestrians to the water via a bevy of landscaped medians. A boardwalk weaves together sports courts, play structures, recreation centers, and open areas for games and picnics. In between is a generous sprinkling of public art that adds local flavour and culture to the area.



### [DARLING QUARTER / CIRCULAR QUAY] SYDNEY, AUSTRALIA

*Diagnosis: Like Toronto, Sydney's Darling Harbour is situated immediately next to a major highway; but unlike Toronto, is able to negotiate that physical boundary and draw multitudes of people to activate an otherwise forgotten space of the city into a thriving hotbed of activity.*

The standout feature of Darling Quarter is its interactive playground that allows children to have fun but also provides an educational environment as the playthings themselves are set up to impart lessons such as learning about basic principles of water movement ie. the Archimedes Screw. It negotiates the issue of highways and office towers by cutting large paths through the site that open sightlines and encourages movement from city dwellers.



### [GRAND CANAL SQUARE] DUBLIN, IRELAND

*Diagnosis: Well-chosen location and thoughtful relationships pulled from context create a dynamic public space.*

The strength of this project lies in its use of space and light. By day, its bright red "carpet" with contrasting green polygons (that provide seating and greenery) draw the public eye. By night, its red angled glow sticks light up the space creating a theatrical path to the theatre. The use of granite and greenery recalls traditional Irish landscape. It is large enough to host major public events such as performances and festivals and it opens onto a large, non-tidal body of water allowing visitors to safely connect with the shoreline without fear.



### [ST. KILDA FORESHORE PROMENADE] VICTORIA, AUSTRALIA

*Diagnosis: Wooden promenade takes on new life through strategic widening and contextual bumps and niches.*

By widening and imitating the topography of the beachfront, Christopher Sawyer of Site Office created a space that can be simultaneously skate park, seating, theatre, bike path, and social hangout.





### [INDERHAVNSBRO] COPENHAGEN, DENMARK

*Diagnosis: An overabundance of flashy architecture contributes little to the public realm.*

One would think that if a city had an already successful precedent for waterfront design, it shouldn't be too hard to replicate that success elsewhere in the city. However, this is not the case for Copenhagen's new waterfront (Inner Harbour), whose lifelessness is a stark contrast to its old harbour (Nyhavn) that is constantly teeming with people and activity. Perhaps due to a rising fascination with adding the next iconic building to the water's edge, Copenhagen's Inner Harbour has seen an increasing amount of figural buildings that do little to invite the public to its edges resulting in a certain listlessness and inert atmosphere.



### [HONG KONG] HONG KONG ISLAND

*Diagnosis: No paths for public use and no attractions for even venturing to the water's edge.*

Demand for housing has always been high in Hong Kong and with most of the island already developed, the city is forced to continually expand into the water by constructing new towers on landfill. There is no value in seeing empty land as potential for public space, only as potential for more housing units. In a harbour known for its amazing views and markets, it is a shame that none of this is made available for its inhabitants. Instead, if they have the means, residents will escape to Lantau Island where they can experience a real interplay between water and city. This makes Hong Kong increasingly seen as just a place to work and not for play as well.



### [BOSTON] MASSACHUSETTS, USA

*Diagnosis: Too many high-rise residential towers limits public activity and views of the waterfront.*

If Copenhagen and Hong Kong combined their waterfront issues together, one would get Boston. Boston suffers from a focus on too much residential and flashy architecture (everyone wants to design the next iconic tower) and not enough focus on public space. The most recent battle is for the rights to build the Seaport tower that encroaches on most of the South Boston Harbour and does little to give back to the public realm. If passed, it will set a dangerous precedent for the rest of Boston as developers would now have leverage to push their future projects.



### [SEATTLE] WASHINGTON, USA

*Diagnosis: The highway acts as a spatial and psychological border isolating the city from the waterfront.*

Seattle has the benefits of beautiful scenic mountain views that are currently being ruined by the Alaskan Way Viaduct that separates city from waterfront. Perhaps a blessing in disguise is an increasing realization that the Viaduct is no longer structurally stable enough to handle the increasing loads of vehicular traffic. If they choose to tear down the Viaduct, Seattle may have another chance to save their waterfront and integrate with the city. A promising precedent of this situation exists with San Francisco, which was forcibly led to demolish its Embarcadero Freeway after the 1989 Loma Prieta earthquake. It chose not to rebuild this highway and instead invested in transit service. Today its inhabitants enjoy their waterfront with ease and make active use of it.



### [NEW QUAY AREA / DOCKLANDS] MELBOURNE, AUSTRALIA

*Diagnosis: Waterfront only thought of as a residential and commercial harbour but there is so much untapped potential to turn edges into public space.*

Currently in the middle of a large master plan, the developers of the New Quay Area / Docklands have their minds set on turning this large picturesque swath of shore into a veritable wall of residential towers. Eight towers are already up with three more to follow and a large empty lot next to it that--- should the developers be able to get their hands on--- one can imagine more such towers would be built.



### [VANCOUVER] BRITISH COLUMBIA, CANADA

*Diagnosis: High-rise residential towers obstruct views and further segregate the city by monetary class.*

Vancouver suffers from a bad case of the "Dubai-ism" effect: the syndrome where most architects / developers want to design the next towering, iconic skyscraper and no one wants to think about the more human scale- ground level context. This results in a disjointed collection of towers that block sightlines for the rest of the city. It also highlights the increasing cost of real estate and forms an elitist attitude of who does and who does not belong on the waterfront further alienating an already reluctant public to venture to the water's edge.



## *Jože Plečnik, Ljubljana River*



Jože Plečnik, most notable for his architectural and urban planning contributions to Slovenia and Prague was interested in using the Ljubljana River as a way to activate the desolate city of Ljubljana. He proposed and later built paths that have strong public programming as the destinations giving users 'incentives' to use the circulation paths and stay once they reach the destination.

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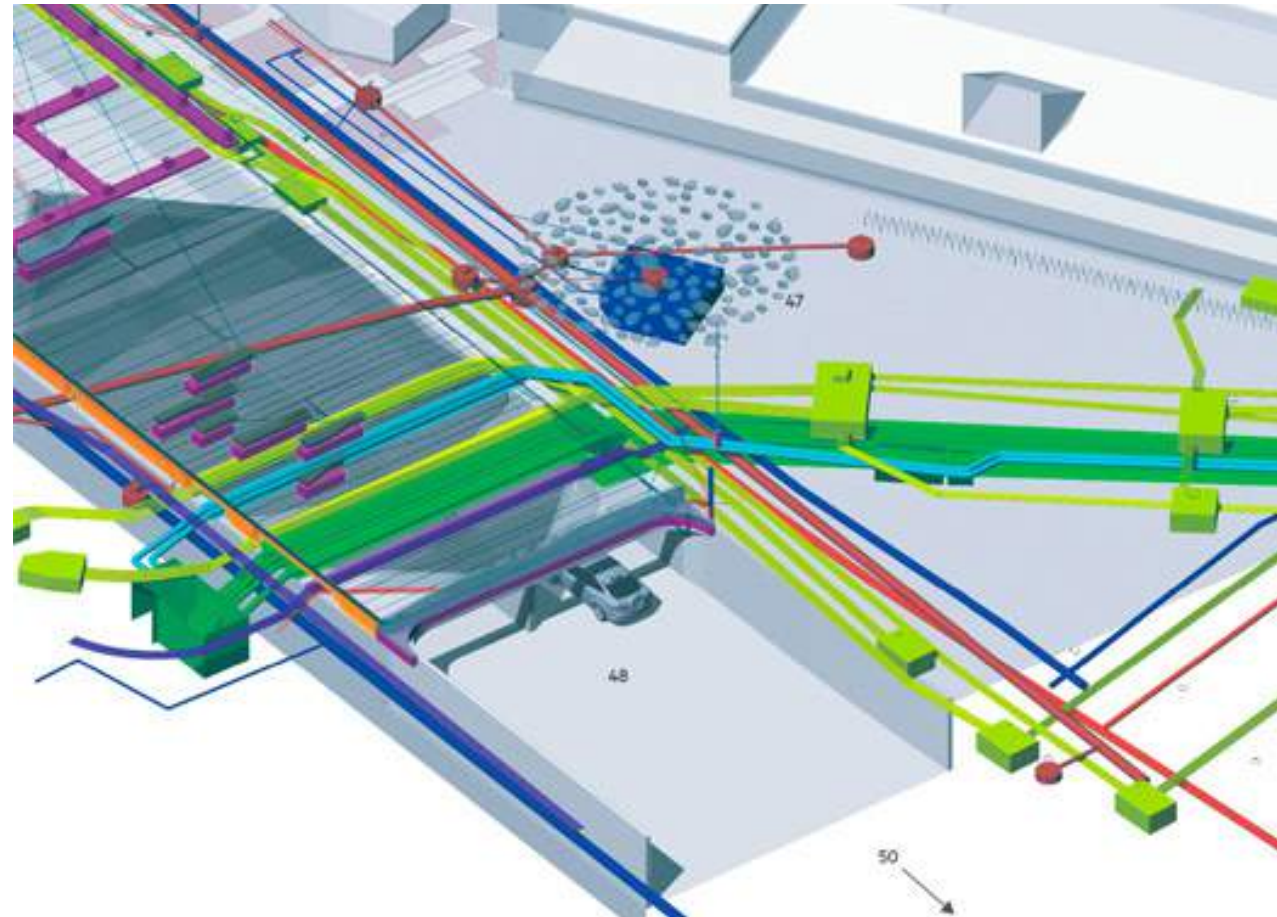
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### **LEARNING FROM (DESIGNED) WATERFRONTS:**

*Further zooming into specific projects;  
a progression of ideas about how to reconcile  
the waterfront with the urban fabric of the city*



***Stoss Landscape Urbanism, The Plaza at Harvard***



Stoss Landscape Urbanism focuses on creating resilient landscapes as their primary mode of operation that then that also holds cultural and social meaning as well as. The Plaza at Harvard University is a good example of this where they had to negotiate storm water management and underpass infrastructure with the necessity of creating a gathering space in an inactive void on campus.

***Weiss/Manfredi, Seattle Olympic Sculpture Park***



Over in Seattle, Weiss/Manfredi begins to address the infrastructural divide with their Olympic Sculpture Park that melds from the highway to bridge over the railway to reach the water with a zig-zagged pedestrian walkway. Like Toronto, Seattle has infrastructural divides that this museum-park hybrid branches over to reach the water. However unlike Toronto this park did not have to negotiate an additional architectural barrier with the infrastructural one.





## PROPOSED SITE: THE HARBOURFRONT TORONTO, ON, CANADA

*Diagnosis: An inaccessible waterfront. The residential and office skyscrapers, the Gardiner Expressway, and the GO Railway serves to sequester and disconnect the waterfront from the city. Also suffers from a lack of cultural identity and planning.*

Toronto's confused and isolated waterfront is a reflection of its haphazard planning history. With no clear direction, parts were developed and then abandoned in favour for what the city needed at various points. Its first attempt was to purely commercialize the area for industry (which failed) and later for residential (which also failed). In both cases, the projects lost funding midway as the public showed a reluctance to use the space. People were cited as feeling unsafe (large dirty warehouses tend not to exude family friendly feelings) or confusion (just *why* were those apartments taking that long to build again?) It then switched to conservation and bioregionalism which further alienated the public. Then it tried to take inspiration from Barcelona whose 1992 Olympic bid kickstarted a successful revitalization of its waterfront. Five failed Olympic bids later, Toronto was still no where closer to solving its waterfront problem. To make matters worse, the Gardiner Expressway and the GO Railway were now popular enough that removing them from the city was unimaginable. The boundary between city and waterfront was growing ever more divisive and permanent with each passing day. Though the harbourfront has shown some development from the 2000s and onwards, Toronto still has to grapple with issues of connectivity as there are still very few paths that link the waterfront back to the city.

In his essay titled *Spatial Discourses and Social Boundaries*, Matthew Cooper explains that "The crucial point is that the 'Toronto waterfront' is not a naturally given phenomenon, a line neatly separating the land from Lake Ontario. Rather it is a historical and social product, and by no means a finished one." So if one talks about the waterfront as an integrated, connected element, then it only makes sense that the design of said waterfront integrates and connects the edge back to the city.

*“[The] Harbourfront offers useful lessons for those who care about the future of urban centers-- and about the role of public spaces and cultural programming in ensuring their vitality.”*

- Remaking the Urban Waterfront, 228

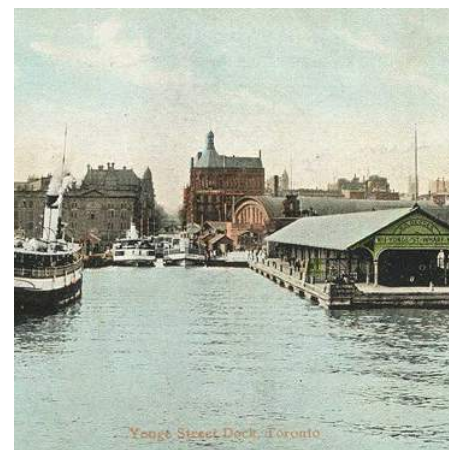
## TORONTO THROUGH THE YEARS

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**1883**

Waterfront treated as early commercial and military settlement.



**1906**

A dominance in railways and locomotive transportation means the waterfront sees little activity.



**1911**

The Toronto Harbour Commission is established and is given power to revitalize Toronto's waterfront.



**1918**

Commercial and industrial dominance being to take hold and the waterfront develops harbours and piers for ships to dock at.



**early 1920s**

The Toronto Harbour Commission finally enacts on their plan to fill in a portion of the harbour. Today this is known as Lake Shore Boulevard (pictured above).



**1928**

A major revision is proposed to develop the outer harbour area between the Eastern Channel and the foot of Leslie Street thereby removing the original proposal for a parkland area.



*“The crucial point is that “the Toronto waterfront” is not a naturally given phenomenon, a line neatly separating the land from Lake Ontario. Rather it is a historical and social product, and by no means a finished one.”*

- Spatial Discourses and Social Boundaries,  
M. Cooper , 383



### 1930s

The 1928 proposal was not adopted due to lack of funding and property rights and the concept of an outer harbour faded into the background early in the 1930s.



### 1949

After receiving bids for the lands from Ontario Hydro and from Consumers' Gas, the harbour commission was able to ask the city to sell them the two parcels of land it needed to construct the Outer Harbour.



### 1950-60s

The Outer Harbour is reintroduced and this time actually built. It takes a decade to settle finances and then the next five years after that to figure out the engineering behind the landfill (1960-65) To this day, it is still not populated, and is instead used for people to dock their yachts in the off season.



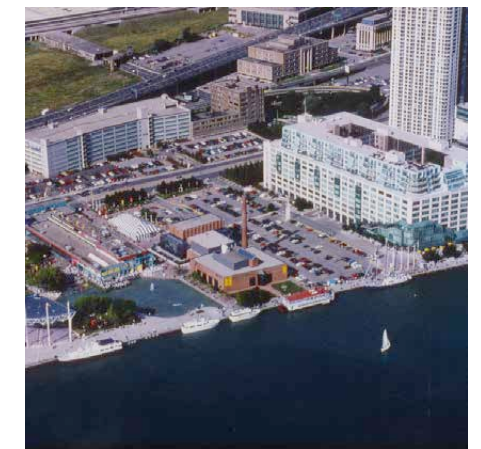
### 1974

The culture of consumption begins and waterfront development is halted in favour of developing trade as the main focus of the harbourfront.



### 1980s

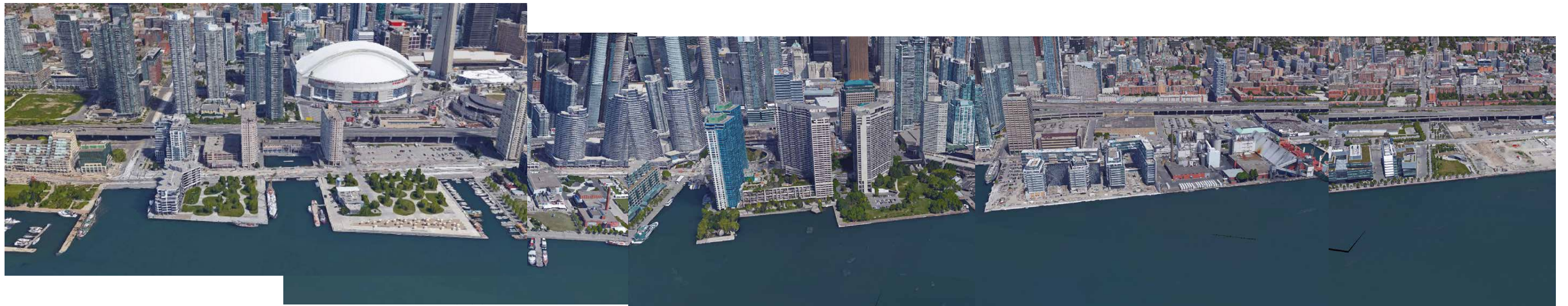
The Harbourfront Corporation proposed a plan to take the city to the water's edge by including a mix of recreational, commercial, and residential uses. However only the residential got built, mostly in the form of “upscale high rise condominiums, hotels, and shopping along the lake shore.” (Cooper, 381)



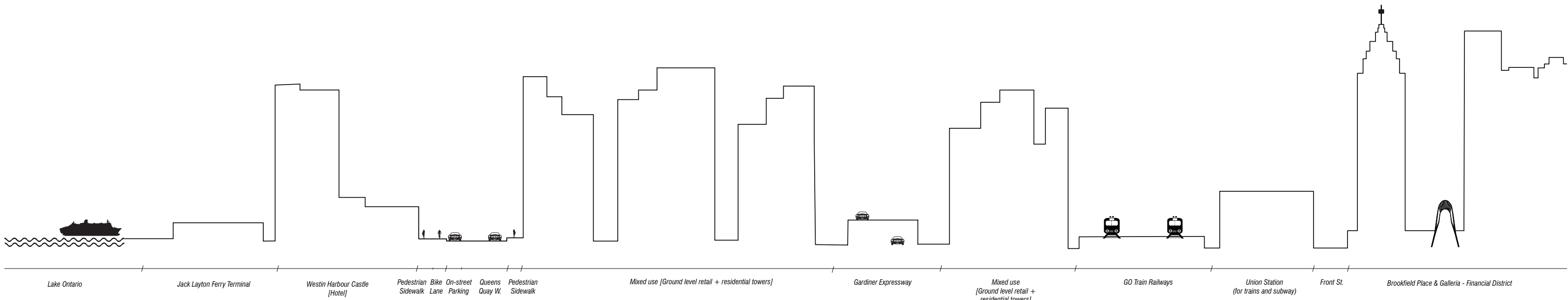
### 2005- present

Revitalization of the waterfront is seen as a desirable goal for both social and environmental reasons. From 2005 onwards, the Harbourfront Centre has been actively working on a series of projects that bring public life back to the water's edge.

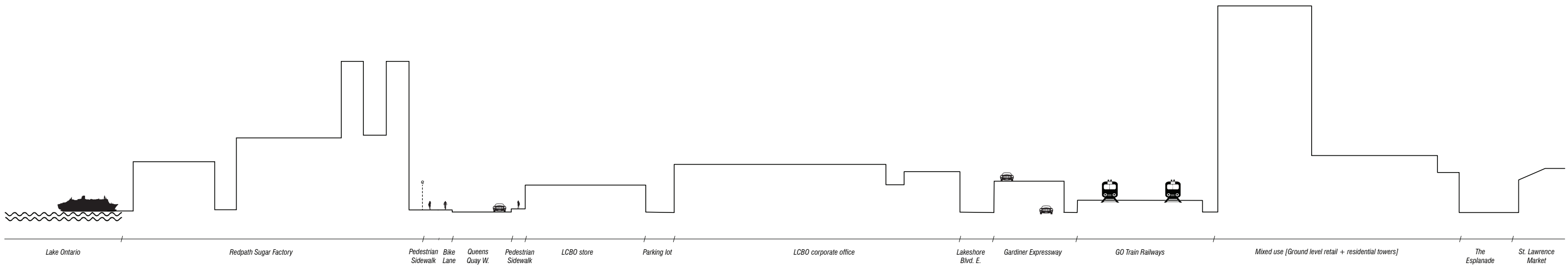




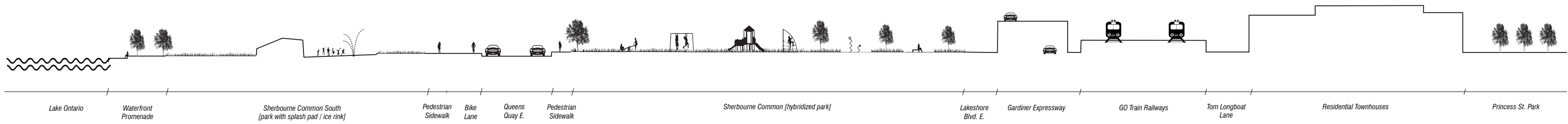




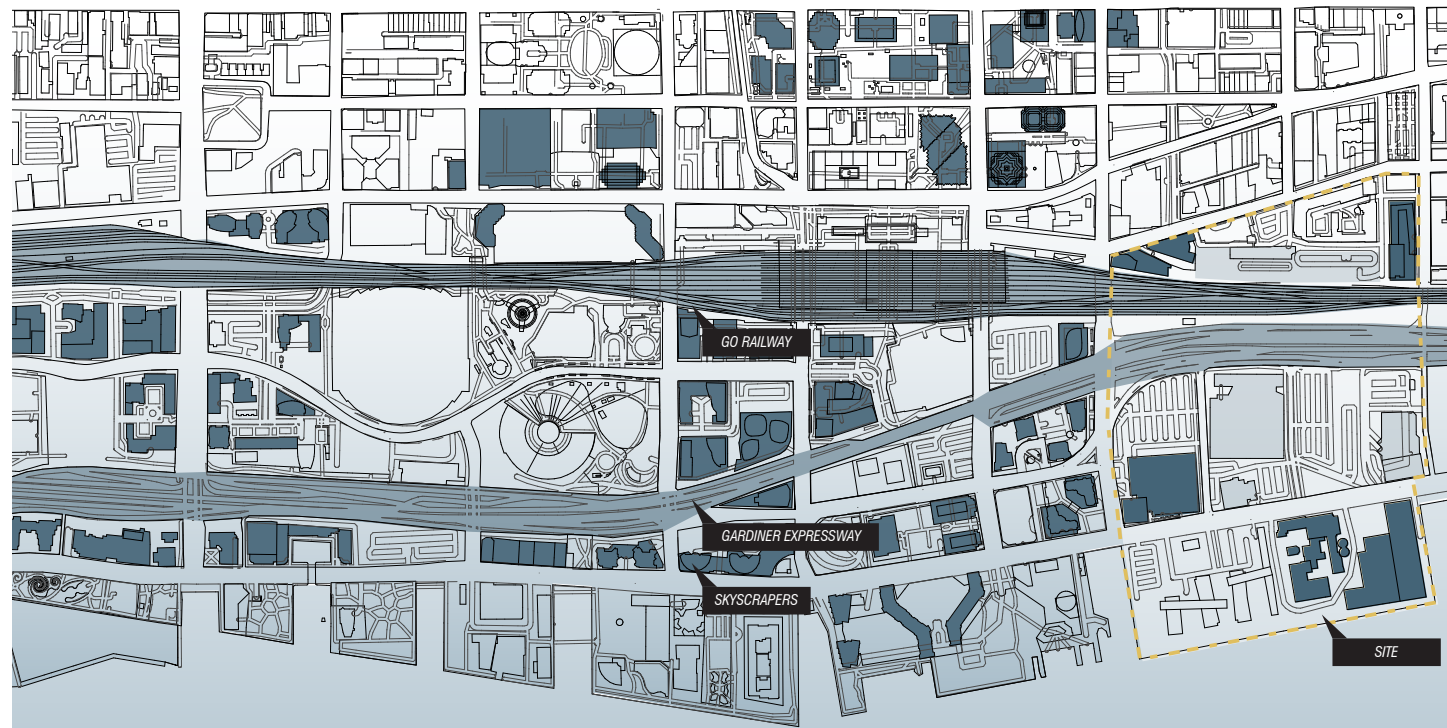
**A.**



**B.**

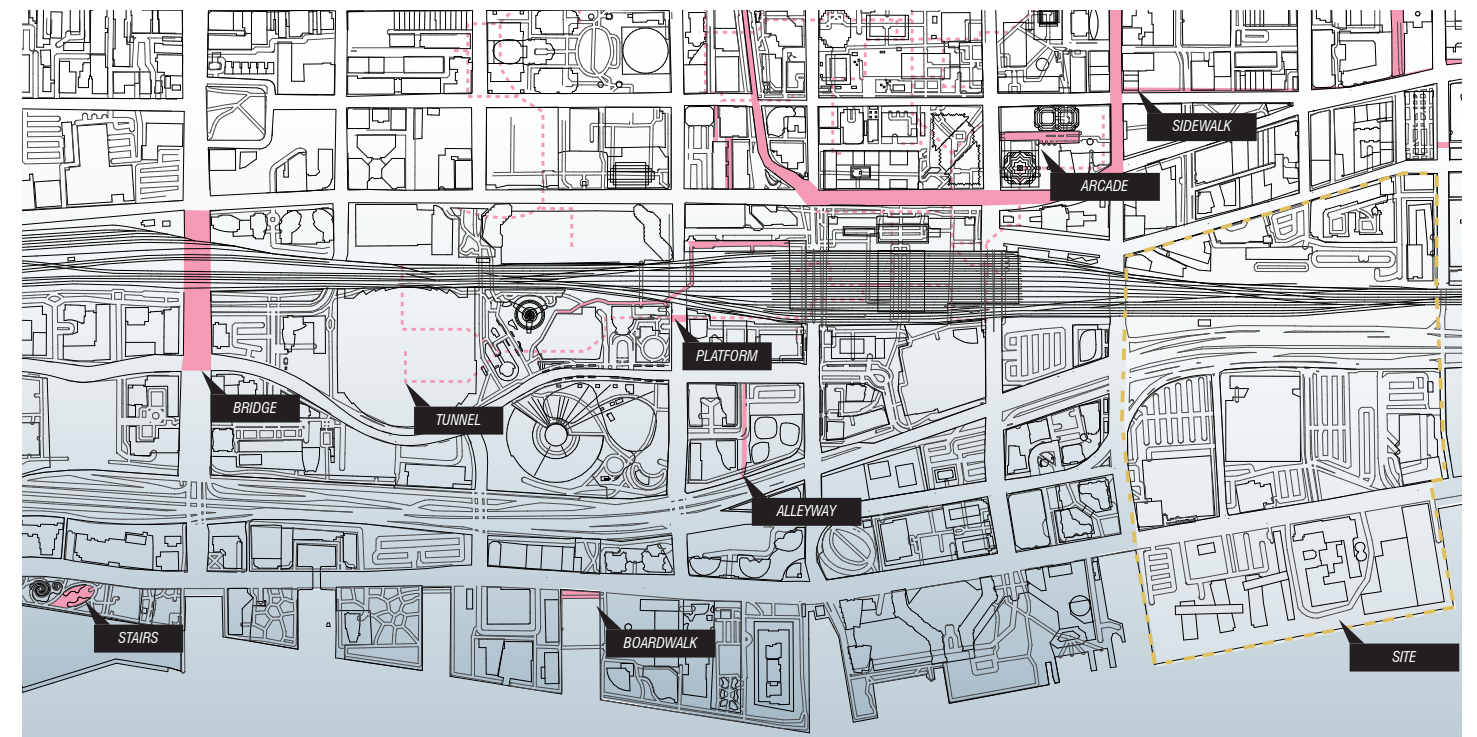


**C.**



**THE DIVIDERS**  
Toronto's Harbourfront

Through a careful site analysis identifying the dividers in Toronto, a site became obvious. The eastern-most quay has all three dividers located in close proximity to each other and is also fairly untouched, making it an ideal site within which to test the contention.



**THE CONNECTORS**  
Toronto's Harbourfront

The original eight connection typologies were also suggested through a site analysis of Toronto. They have local prominence to the site and have both advantages and disadvantages which would later inform the logic behind their hybridization.





*Skyscrapers (wall of)*



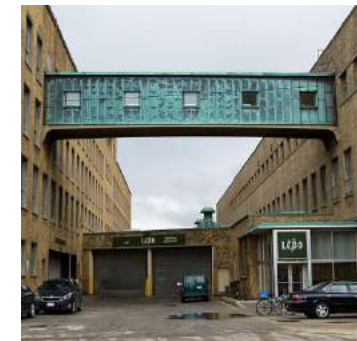
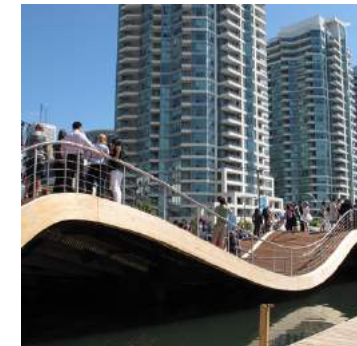
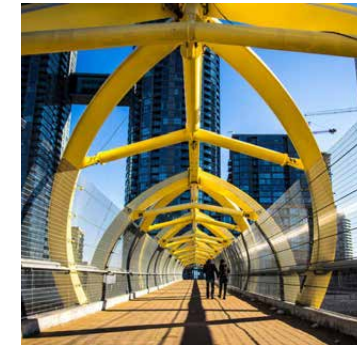
*Highway (Gardiner Expressway)*



*Railway (GO train)*

**THE MACRO-SCALE DIVIDERS OF TORONTO:**

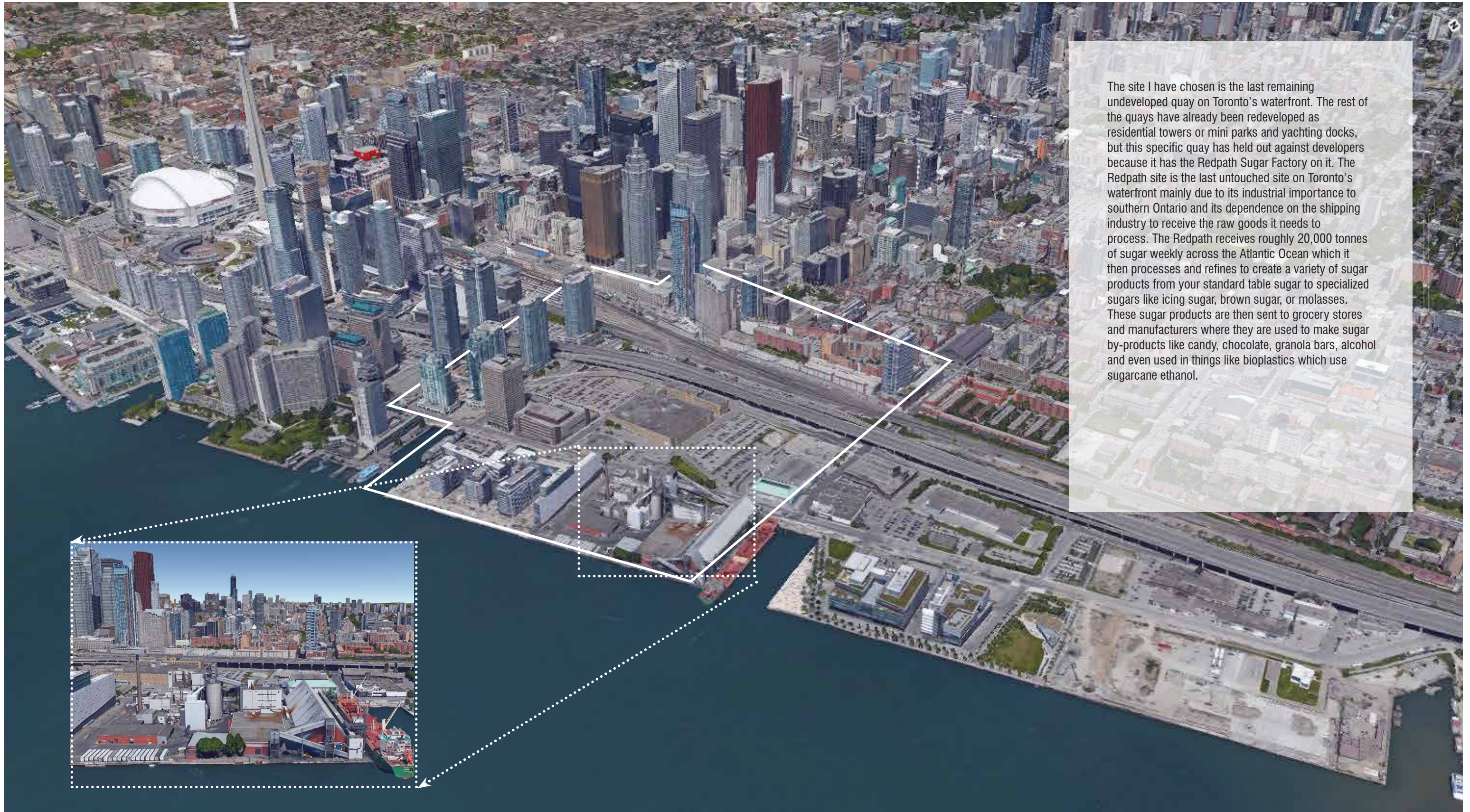
1895- Toronto's first skyscraper is built  
 1950s- Gardiner Expressway is built  
 1967- GO Railway is built



**THE MICRO-SCALE CONNECTORS OF TORONTO:**

LEFT (top to bottom):  
 SFC bridge, Toronto Music Garden, TTC subway, Distillery District sidewalk  
 RIGHT (top to bottom):  
 Puente de Luz bridge, Simcoe Wave Deck, Warehouse Alleyway, Allan Lambert Galleria





The site I have chosen is the last remaining undeveloped quay on Toronto's waterfront. The rest of the quays have already been redeveloped as residential towers or mini parks and yachting docks, but this specific quay has held out against developers because it has the Redpath Sugar Factory on it. The Redpath site is the last untouched site on Toronto's waterfront mainly due to its industrial importance to southern Ontario and its dependence on the shipping industry to receive the raw goods it needs to process. The Redpath receives roughly 20,000 tonnes of sugar weekly across the Atlantic Ocean which it then processes and refines to create a variety of sugar products from your standard table sugar to specialized sugars like icing sugar, brown sugar, or molasses. These sugar products are then sent to grocery stores and manufacturers where they are used to make sugar by-products like candy, chocolate, granola bars, alcohol and even used in things like bioplastics which use sugarcane ethanol.



*proposed site*





## THE HISTORY OF THE REDPATH IN TORONTO



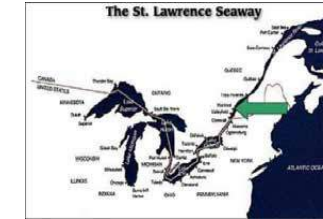
1854

The first sugar production facility is established in Montreal under the name of "Canada Sugar Refinery." The factory refines raw cane sugar into finished sugar products either for retail or industrial "bulk" distribution.



1930

Redpath Sugar merges with Canada Sugar Refining Company Ltd. of Chatham, Ontario.



1959

The Redpath Toronto production complex was the first industrial facility to be built in Ontario. Its opening coincided with the completion of the St. Lawrence Seaway that allowed vessels to travel from the Atlantic Ocean to the western end of Lake Superior, making deliveries and accepting goods for distribution along the way.



1978

The Redpath factory opens a museum on site to provide educational programming of its processes to the public.



1997

The Wyland Foundation produces a mural for the north face of Redpath's raw sugar shed to shed light on the issues of marine life observation jeopardized by industrial facilities.



2004

150th Anniversary of Redpath's company founding in 1854.



2009

50th Anniversary of production on the Toronto Waterfront.



2016

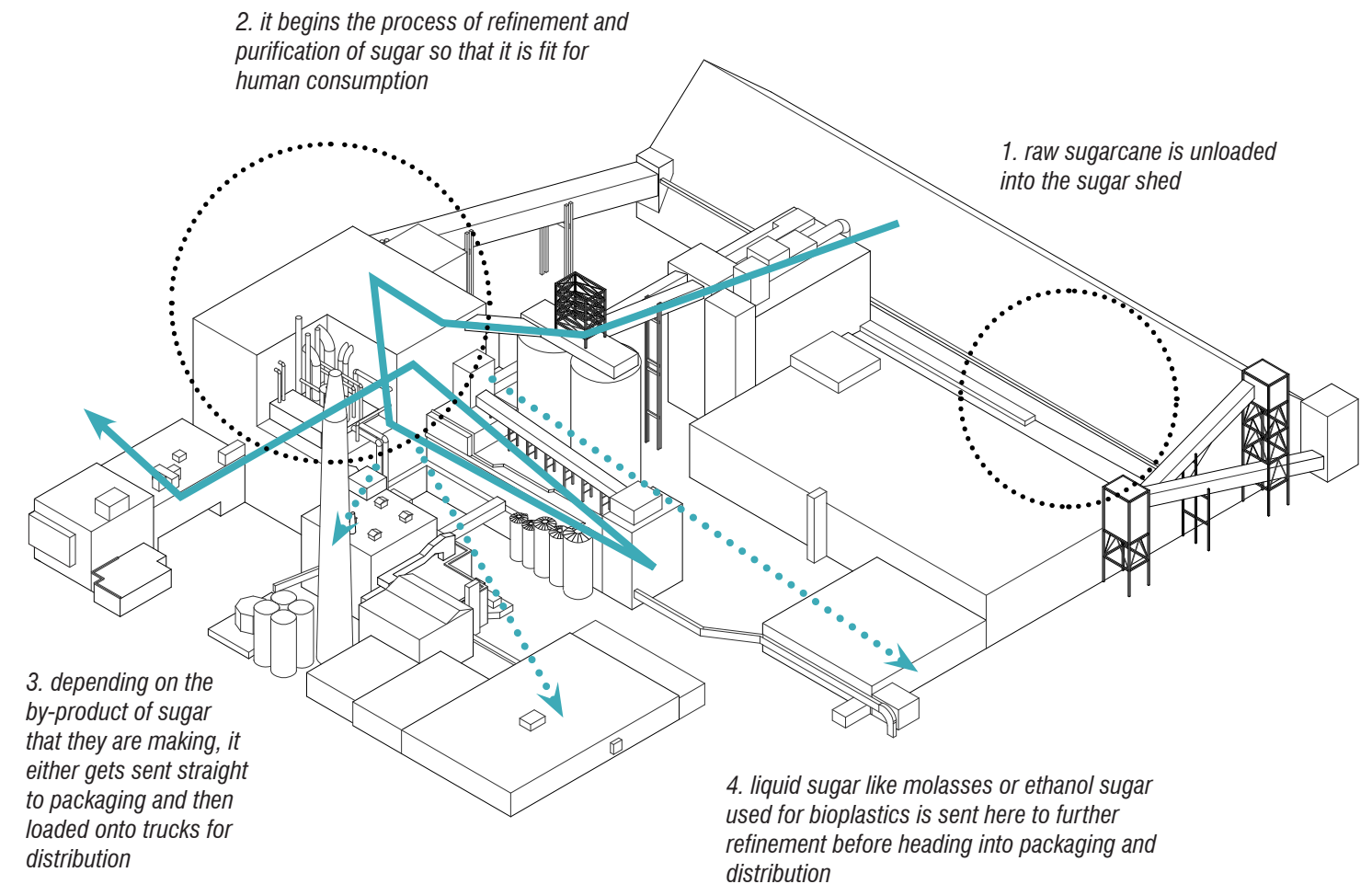
Increasing residential development threatens its presence on Toronto's waterfront as the docking of Redpath's freighters in the early morning hours of the day could violate noise codes per the Ministry of Environment decree.

However, the argument for moving sites is also equally not feasible as it heavily relies on being situated on the water for most efficient and most green methods of receiving and sending shipments. It also is central to the food processing hub in southern Ontario.

## THE REDPATH SUGAR FACTORY

The Redpath factory is also the only factory left that services not only southern Ontario, but Central and Eastern Canada as well since the closing of the Montreal Redpath in 1980. Its importance to Canadians means it is not feasible to assume it will be demolished any time soon, much like how the cars and trains that make up the infrastructural divide will not disappear any time soon either. Instead of demolishing them and building from scratch, it would be wiser and more interesting to learn to engage with it rather than take a tabula rasa approach to the site.

Incidentally, this is also the rationale behind keeping the infrastructure of the sugar factory in place. Even if the sugar factory was to move out, its physical presence should still be preserved in the city. It is a nod to Toronto's industrial heritage and fitting with our history of preserving and repurposing old industrial buildings- the malt silos to the east of the Redpath and the Distillery District a few blocks north of the silos to name a few.



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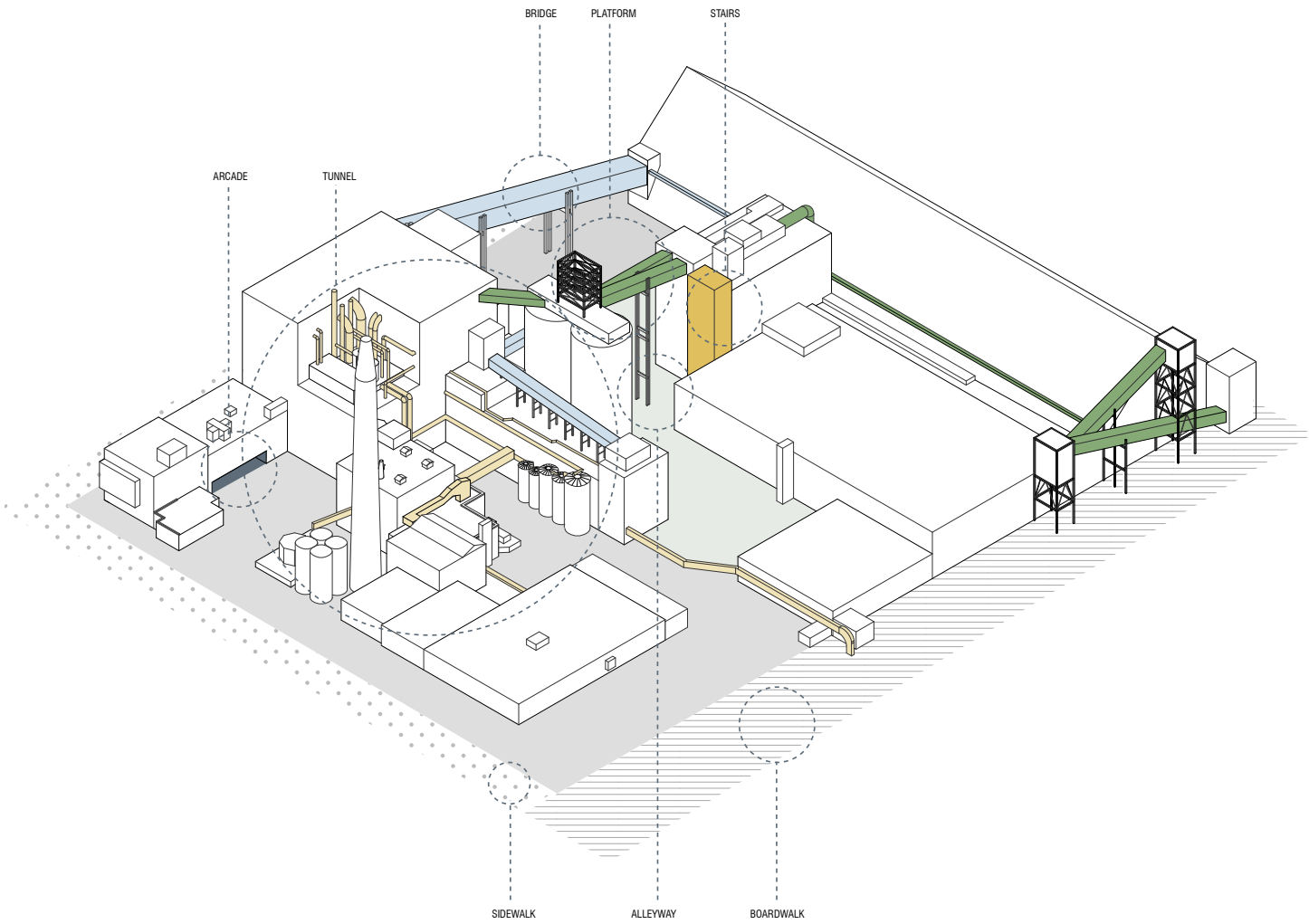
*So if these divides- highway, railway, and skyscraper, and the factory are not disappearing anytime soon, how can we leverage the two to create something that can blur, blend, and merge the divide?*

### THE REDPATH AS A MICROCOSM OF TORONTO

The answer in part, can be found in the divisions that exist throughout the built environment.

Architecture has responded accordingly by building elements such as stairs and arcades and bridges to connect disparate parts but these are generally more successful operating in the individual, micro-scale instances of the city. Connecting across multiple, large, macro-scale sites is more challenging and as the divisions scale up in size, it only makes sense to scale up the connections used to bridge the two together. By rethinking the idea of connection and the typologies that can be derived from them, we can use their components to create new hybridized connections that will address the challenges that reconnecting across macro scale divides in an urban setting hold.

Scaling back down to the size of a building, here the Redpath Factory is shown to be a microcosm of Toronto. We begin to see how these typologies are systemized and could be later blown up to fit a larger site eventually working together to create a richly interwoven urban condition. The shifting nature of scales also becomes an important theme as this thesis progresses.

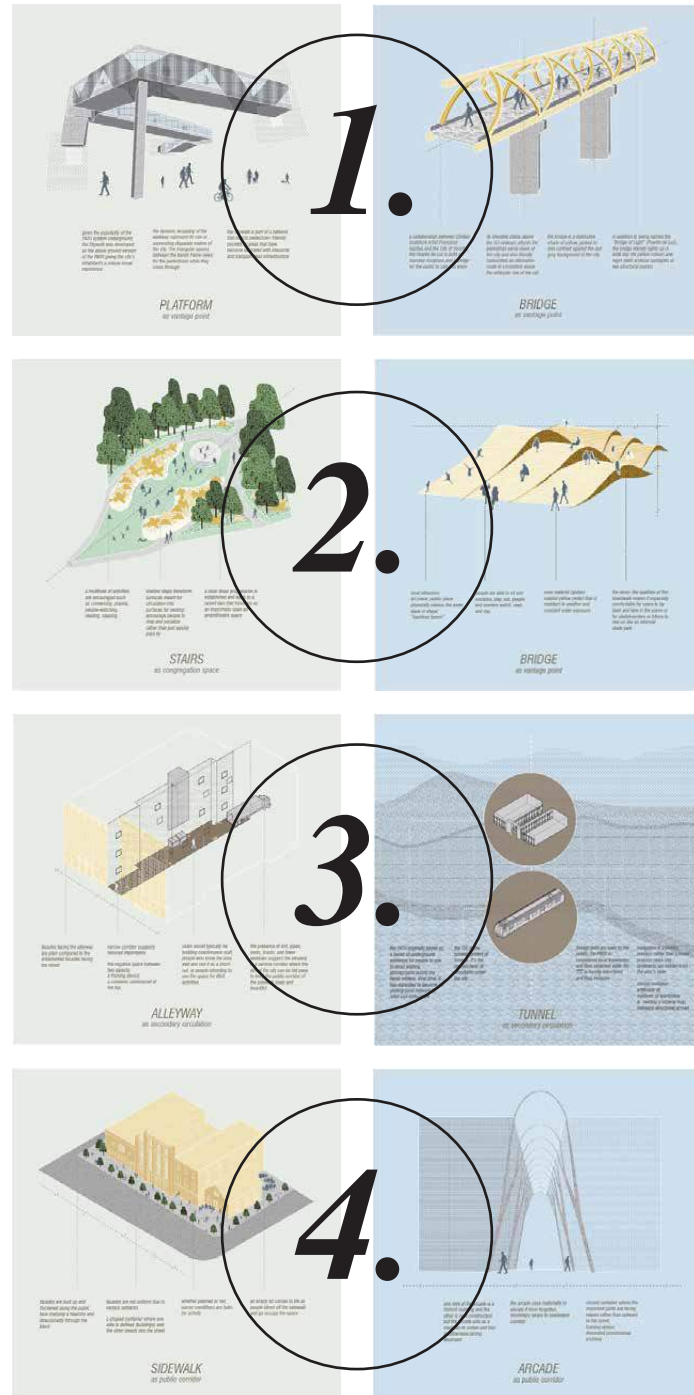




# METHODOLOGY

The research on this topic has resulted in a catalogue of connection typologies that indexes, compares, and contrasts their existing qualities with those that have potential at new and various urban scales. The project proposes to use the hybrid connectors as nodes on an urban path system, which spans city to water and informs the design of a large scale urban bathing initiative. The program of bathing has been chosen because it exposes an idea of connection— a social connection between people and a physical connection with the water. The overall contention is then tested in the setting of Toronto’s waterfront as it faces three macro-scale dividers— a wall of skyscrapers, a highway, and a railway— that isolates the waterfront from the urban fabric of the city.

The design process began with a series of provocative collages that aimed to further refine the larger hypothesis at hand; that of creating a new urbanism driven by hybrid circulation typologies. It set the stage for refining what exactly the hybrids would be, and what their different purposes, scales, and forms would take.

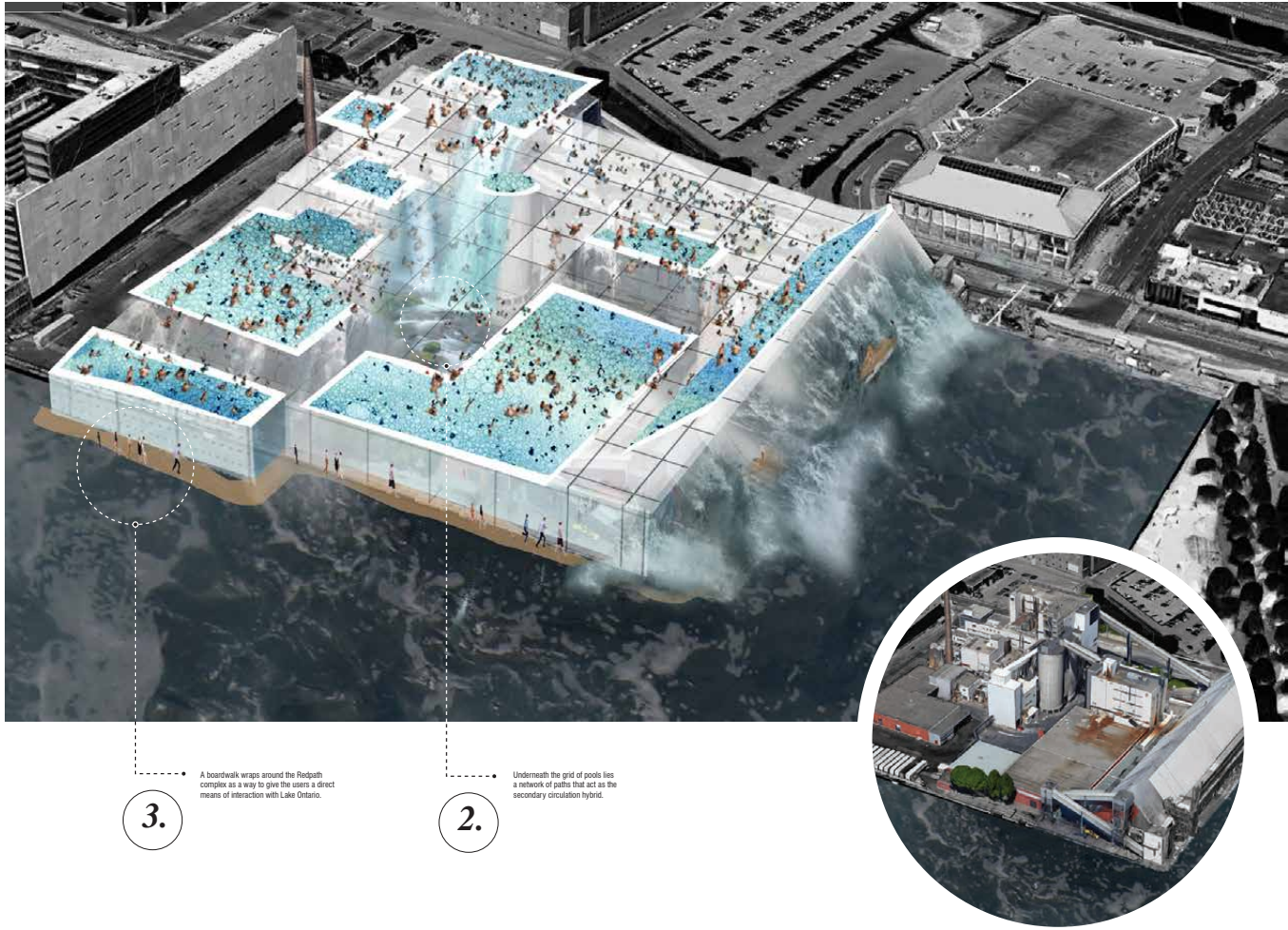




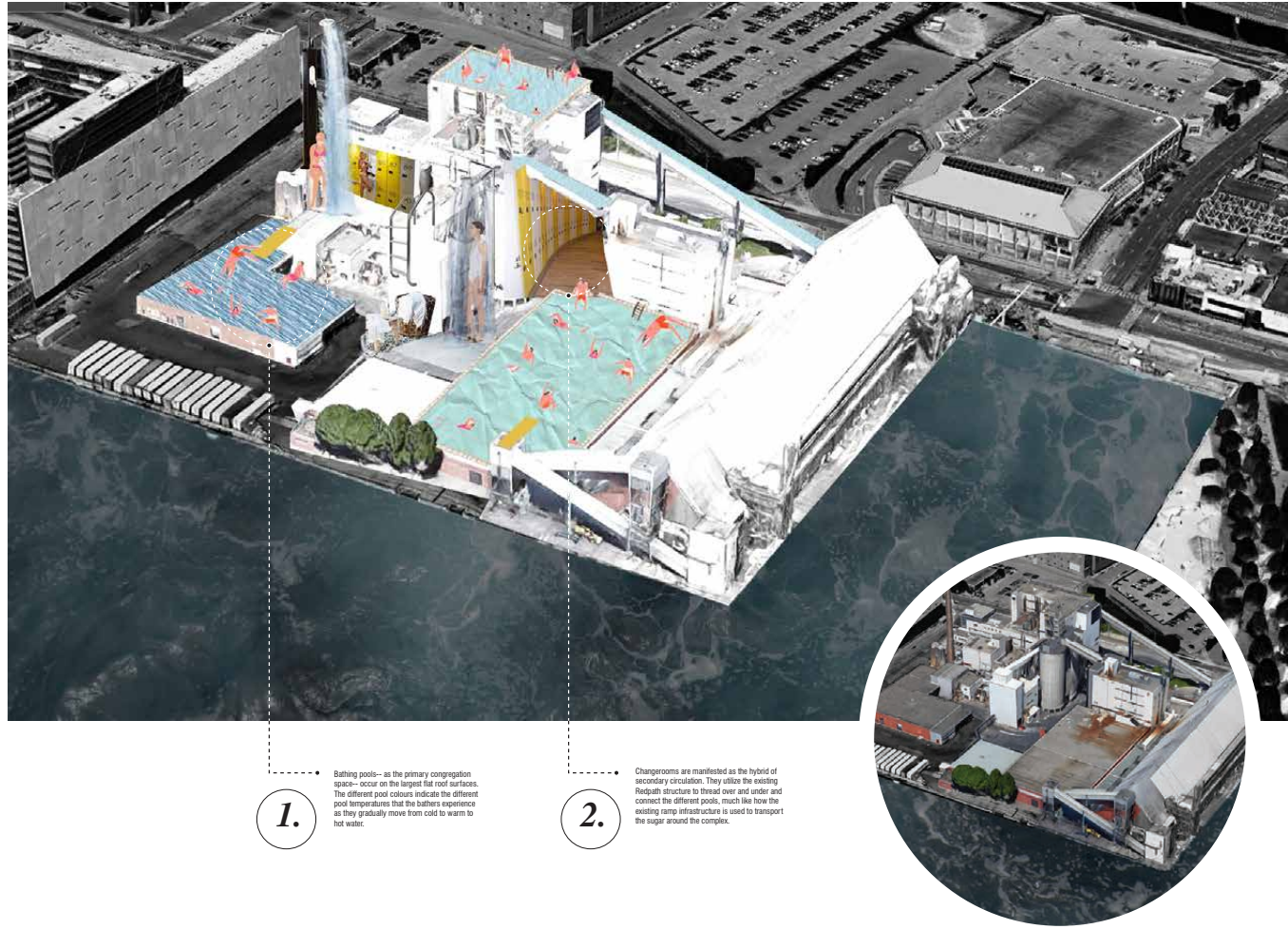
# REDPATH SUGAR FACTORY SCALE (S)

Conceptualizing the hybrid connectors as a network of nodes, the program of bathing is interspersed within the site. Further programmatic elements like a museum or restaurants are likewise matched and infused with different hybrid connectors. A series of schematic collages at a small (s), medium (m), and large (l) scale have been generated testing different programmatic elements with different hybrid connectors. Each scale concentrates on a different relationship with the site. At the smallest scale, the Redpath factory acts as a microcosm of the city of Toronto. At the medium scale, the extent of the site that the project will address is shown. At the largest scale, the impact the project will have on the urban fabric of Toronto is shown.

Set A



Set B

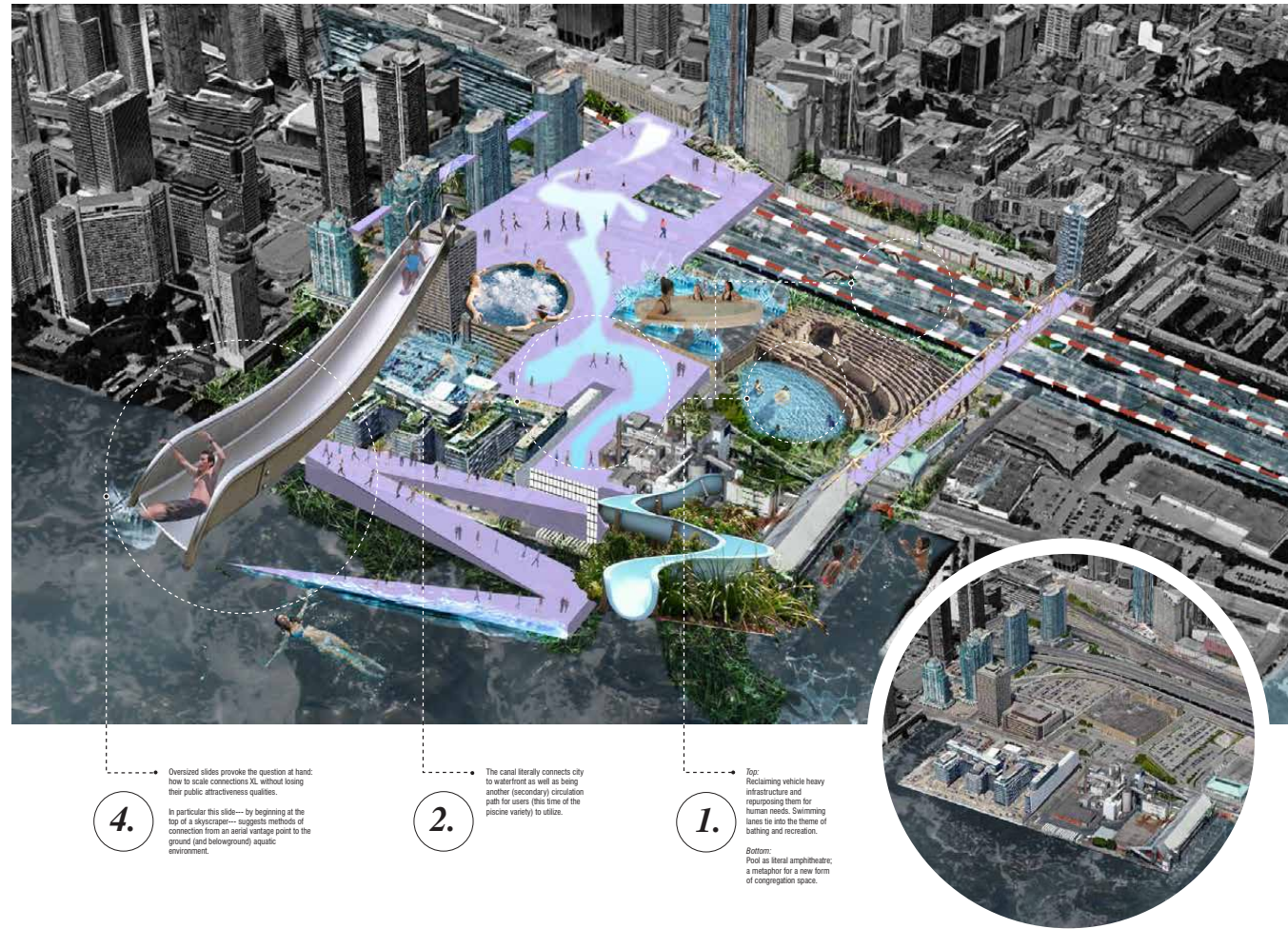




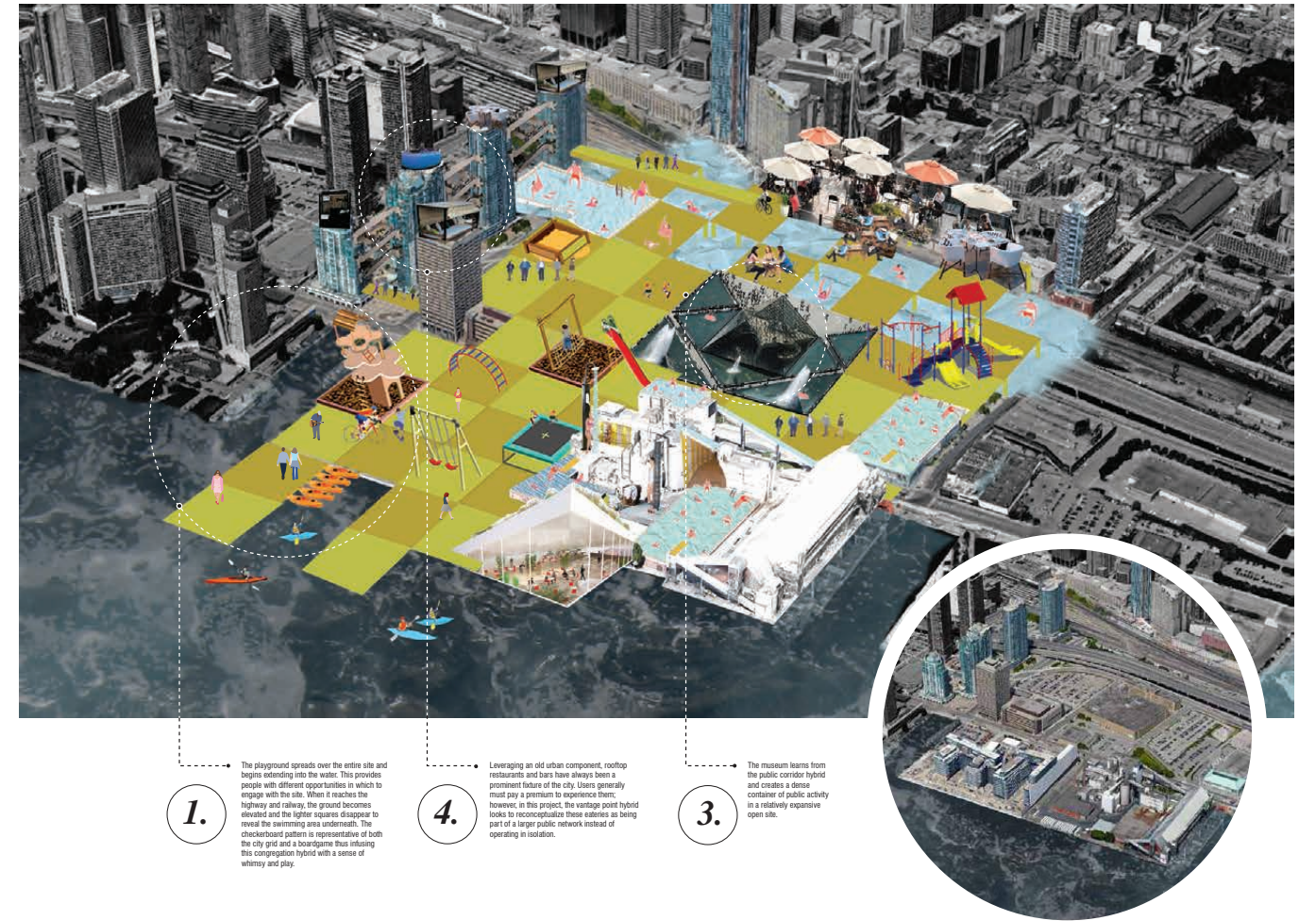
## PROJECT SCALE (M)

A focus on deploying the congregation space and vantage point hybrids is illustrated in the medium scale. In set A, vehicle-heavy infrastructure is repurposed for human needs in the form of swimming lanes that tie back into the theme of bathing and recreation. The oversized slide provoke the question at hand: how to scale connections XL without losing their public attractiveness qualities. In particular this slide--- by beginning at the top of a skyscraper--- suggests methods of connection from an aerial vantage point to the ground (and belowground) aquatic environment. In set B, a checkered ground pattern is representative of both the city grid and a boardgame thus infusing this congregation hybrid with a sense of whimsy and play. When it reaches the highway and railway, the ground becomes elevated and the lighter squares disappear to reveal the swimming area underneath. The vantage point hybrid then looks to reconceptualize rooftop eateries to be a larger public network instead of operating in isolation.

Set A



Set B





## URBAN FABRIC SCALE (L)

At the largest scale, the impact the project will have on the urban fabric of Toronto is shown. At its simplest, this project is about reconnecting the waterfront with the city; in set A, the water is shown as literally invading the urban ground. The program of bathing was chosen as it exposes an idea of connection, a social connection between people and a physical connection with the water. Bathing becomes the primary space of congregation in this project. In set B, the secondary circulation hybrid is manifested as an underwater system that helps mitigate the effects of waste water run-off, control water contamination, and encourage natural fish growth.

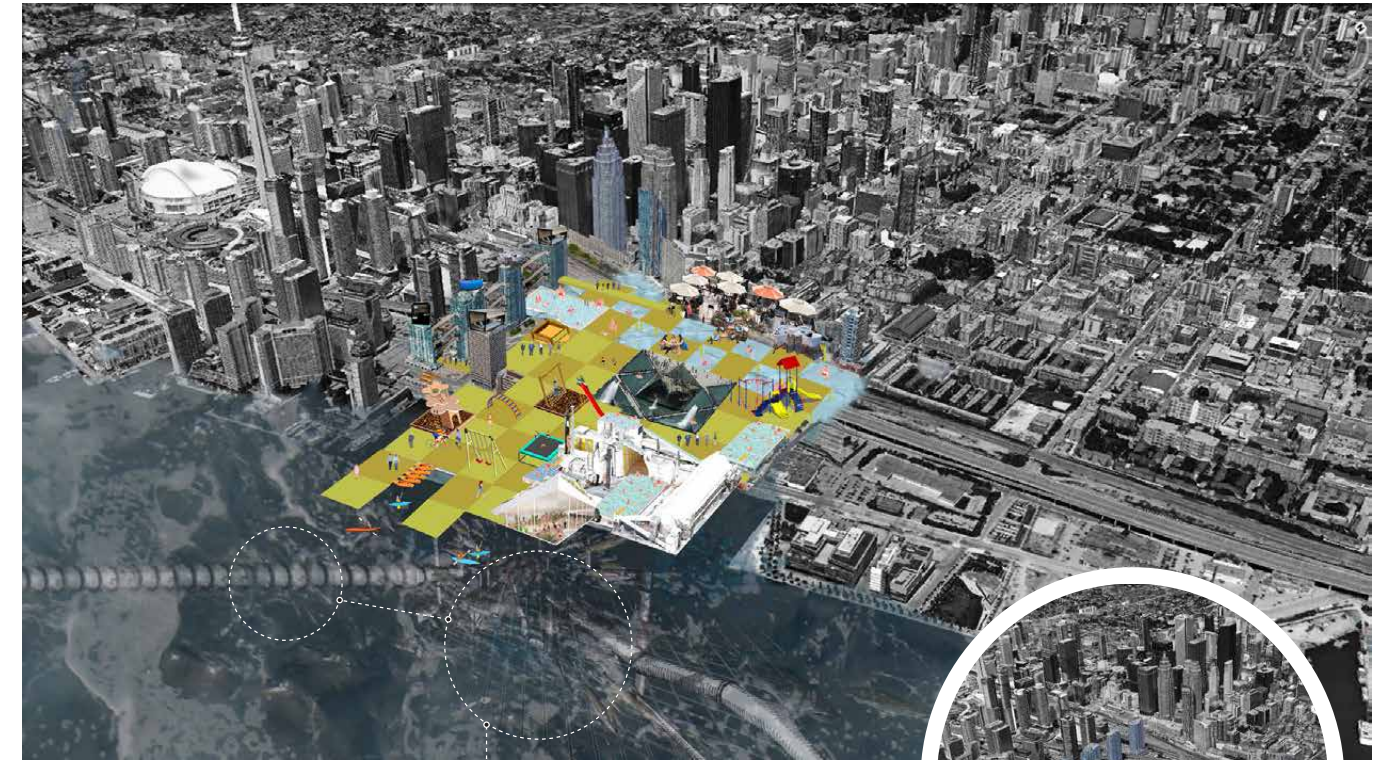
Set A



1.

At its simplest, this project is about reconnecting the waterfront with the city; here the water is shown as literally invading the urban ground. The program of bathing was chosen as it exposes an idea of connection, a social connection between people and a physical connection with the water. Bathing becomes the primary space of congregation in this project.

Set B



2.

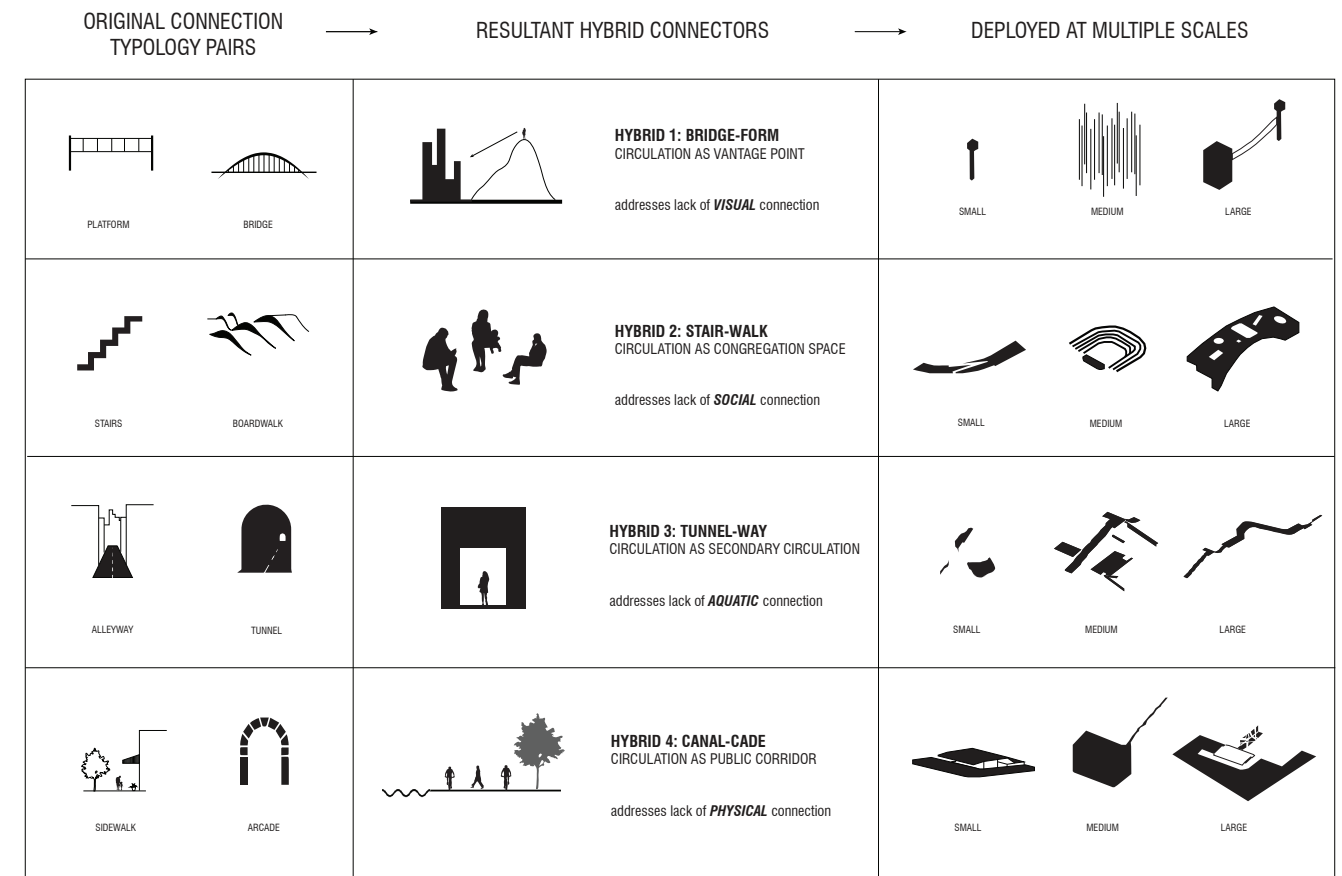
Waste water management is the chief environmental concern for Toronto's Harbourfront. Integrating an underwater system to help control water contamination and encourage natural fish growth is another way the secondary circulation hybrid can manifest itself throughout the site.

## CONNECTOR MATRIX

These urban connectors are the product of a catalog of different methods of circulation that the urban and aqueous environment holds. By identifying each of their unique characteristics, I constructed a matrix and grouped their similarities and differences together in order to create hybrid versions of themselves.

From there, the hybrid connectors then get deployed at three scales- the scale of the person (small), the scale of the building (medium), and the scale of the city (large). The hybrids begin to inform the other to create richer, more interconnected spatial experiences, ie. the small hybrids are found deployed in the medium scale hybrids, and the large hybrids deploy all three.

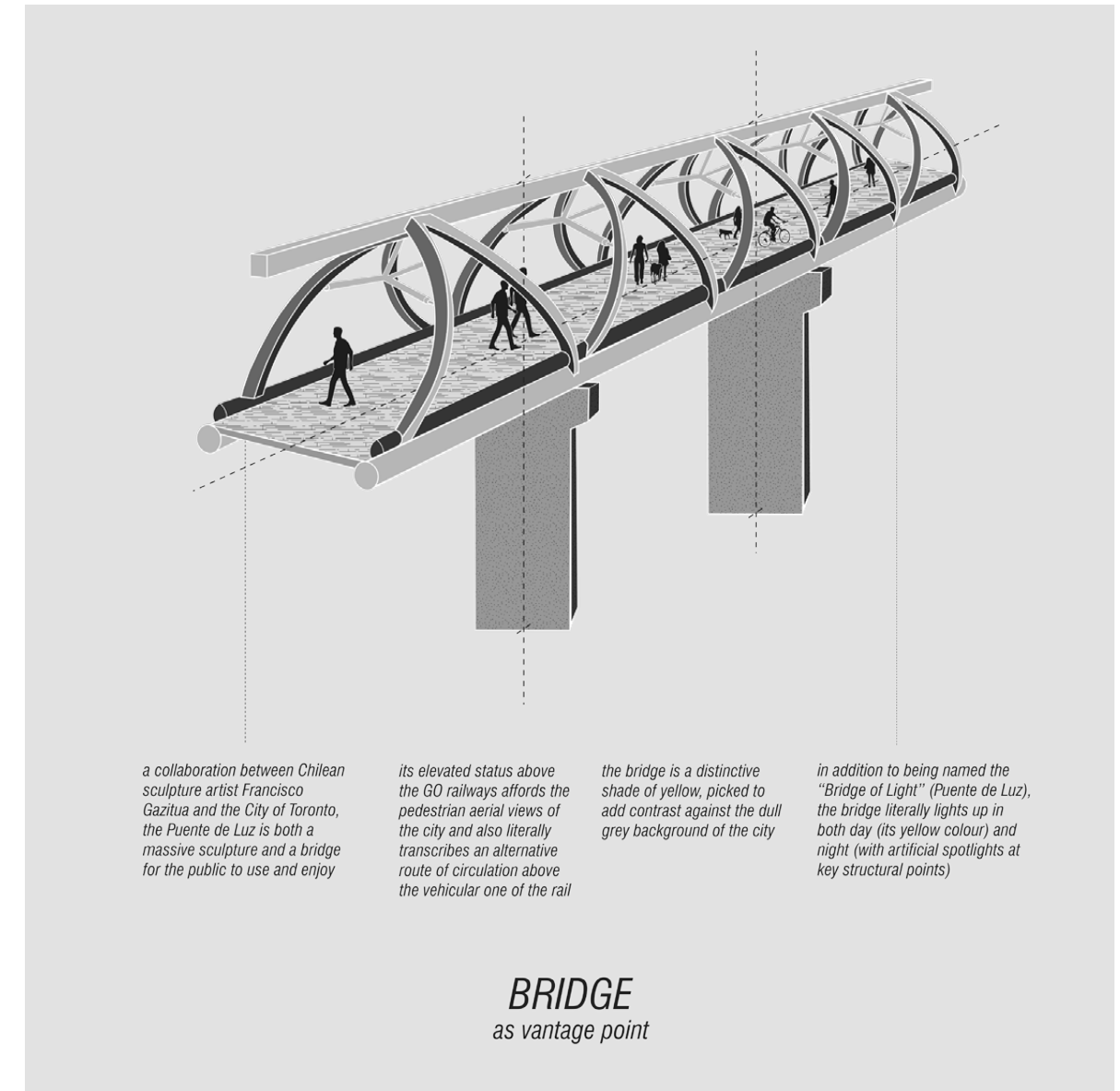
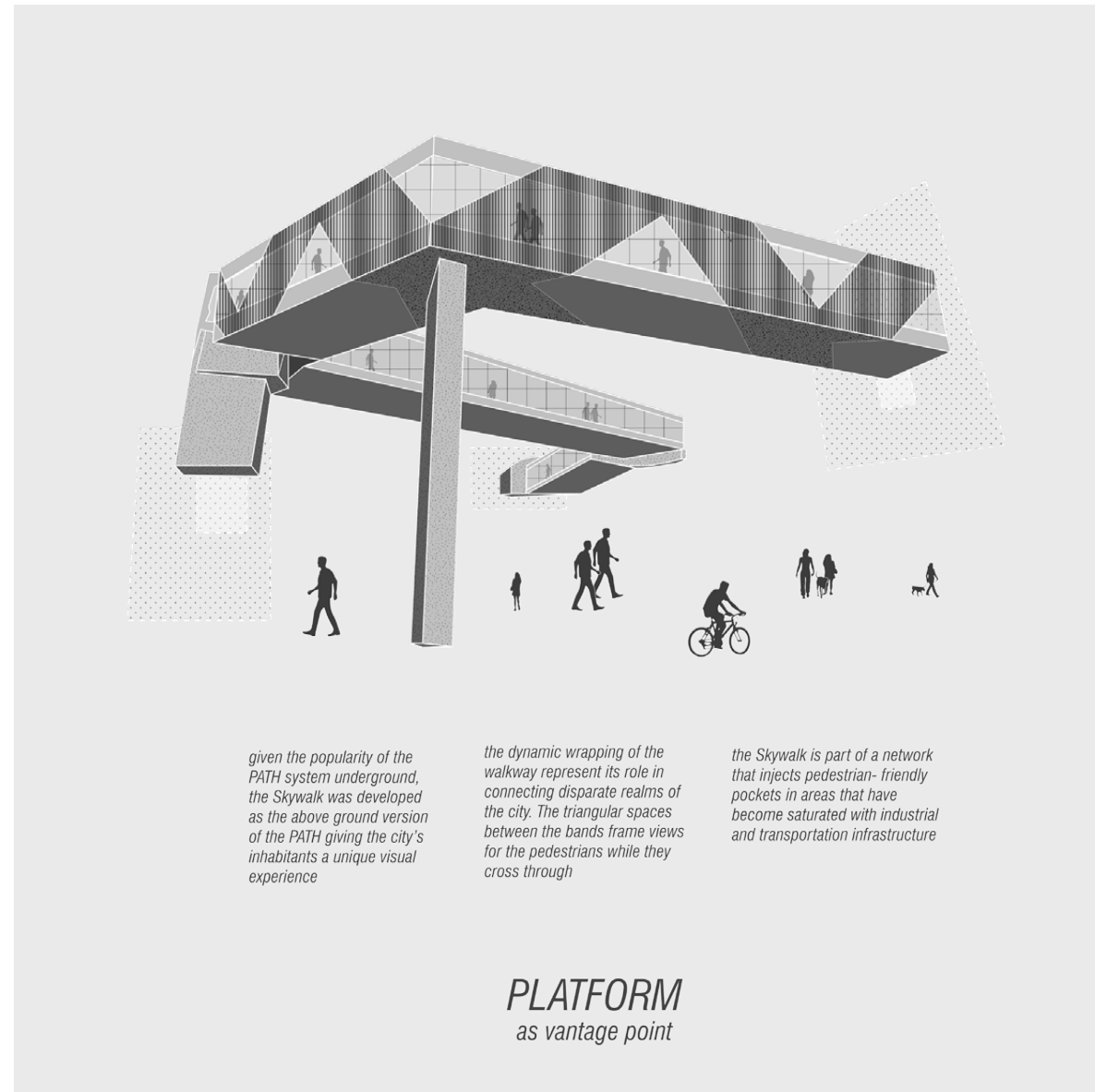
At all scales, each of the hybrids are designed to target one specific aspect of lack of connectivity in the site. The aerial hybrid tackles lack of visual connection. The congregation hybrid solves lack of social connection. The secondary circulation hybrid deals with the lack of ecological connection. And finally, the public corridor hybrid tackles lack of physical connection.



## ORIGINAL TYPOLOGIES FOR VANTAGE POINT HYBRID

Both have qualities that encourage the public to meander or leisurely stroll throughout the city. They are elevated paths above the city that afford the viewer different vantage points of the city. Elevating the person allows for consideration of unseen connections and unknown destinations that are hard to realize on ground level. Spatially, both are completely open to their surroundings unlike the public corridor hybrid that hones in on connection as a literal container of activity.

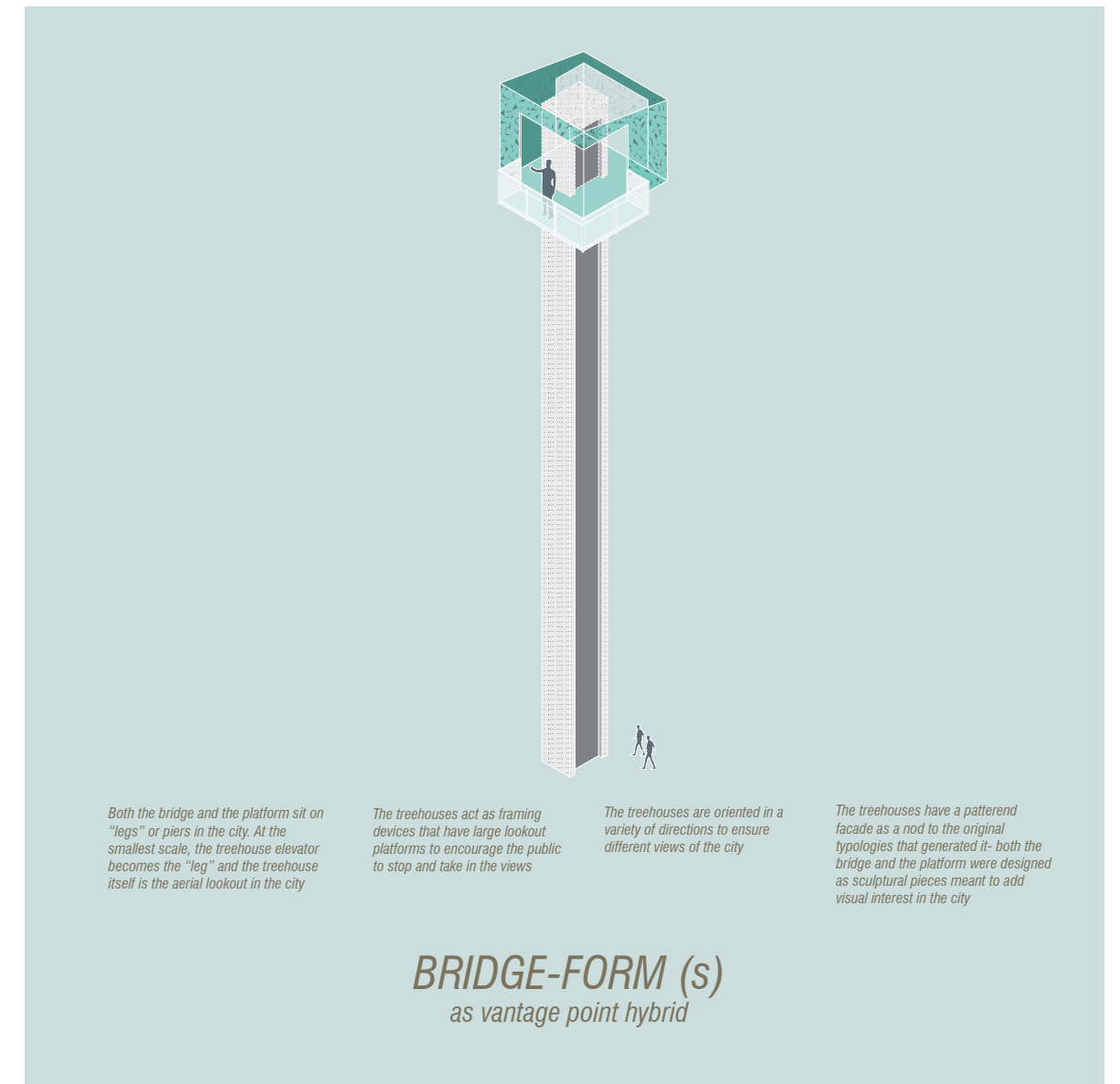
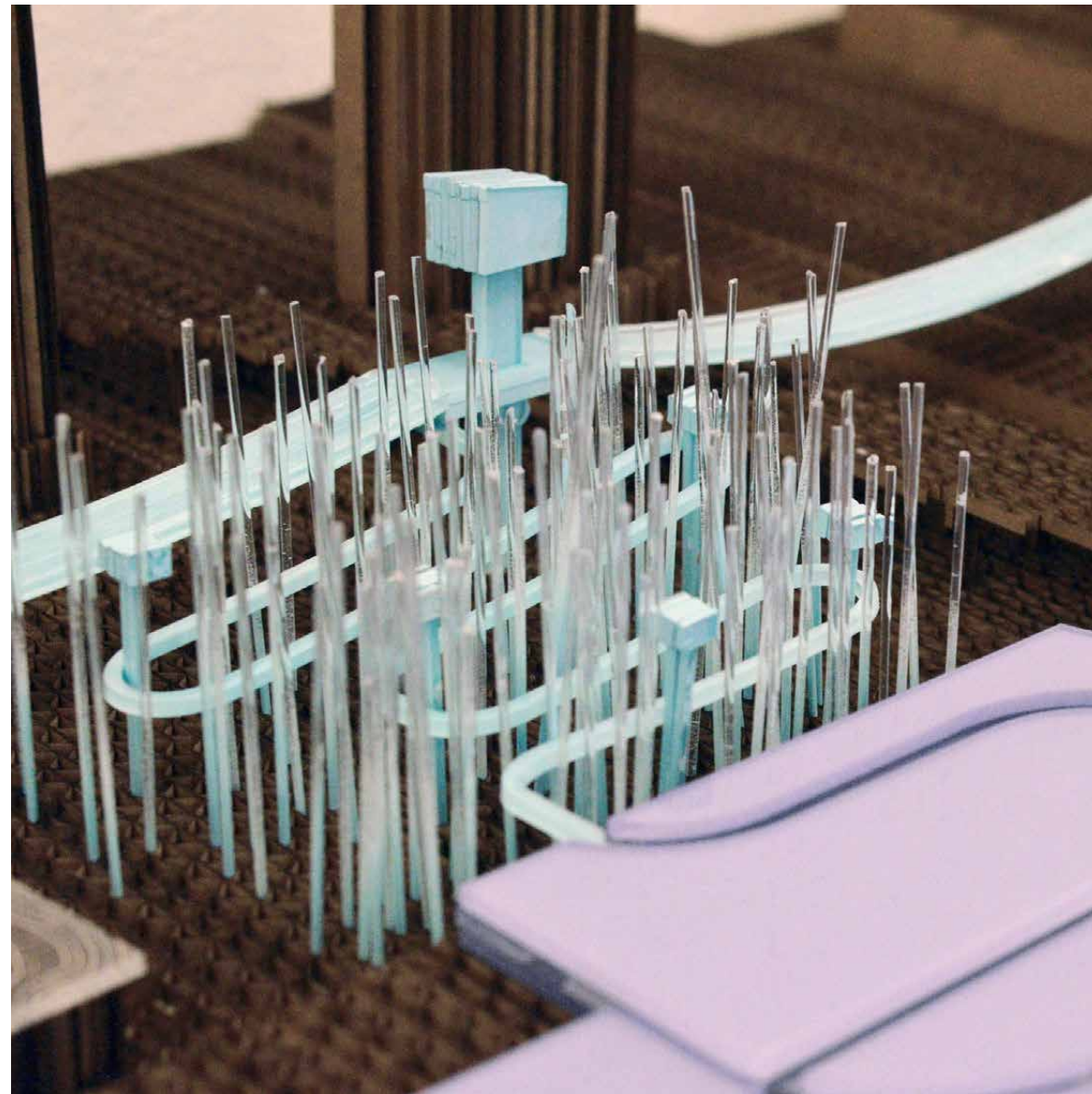
Like the PATH or the subway systems belowground, the Skywalk and the Puente de Luz bridge allows the public an alternative way to circulate and discover the city aboveground. Additionally, they begin to introduce the idea of connection over large-scale infrastructural divides.

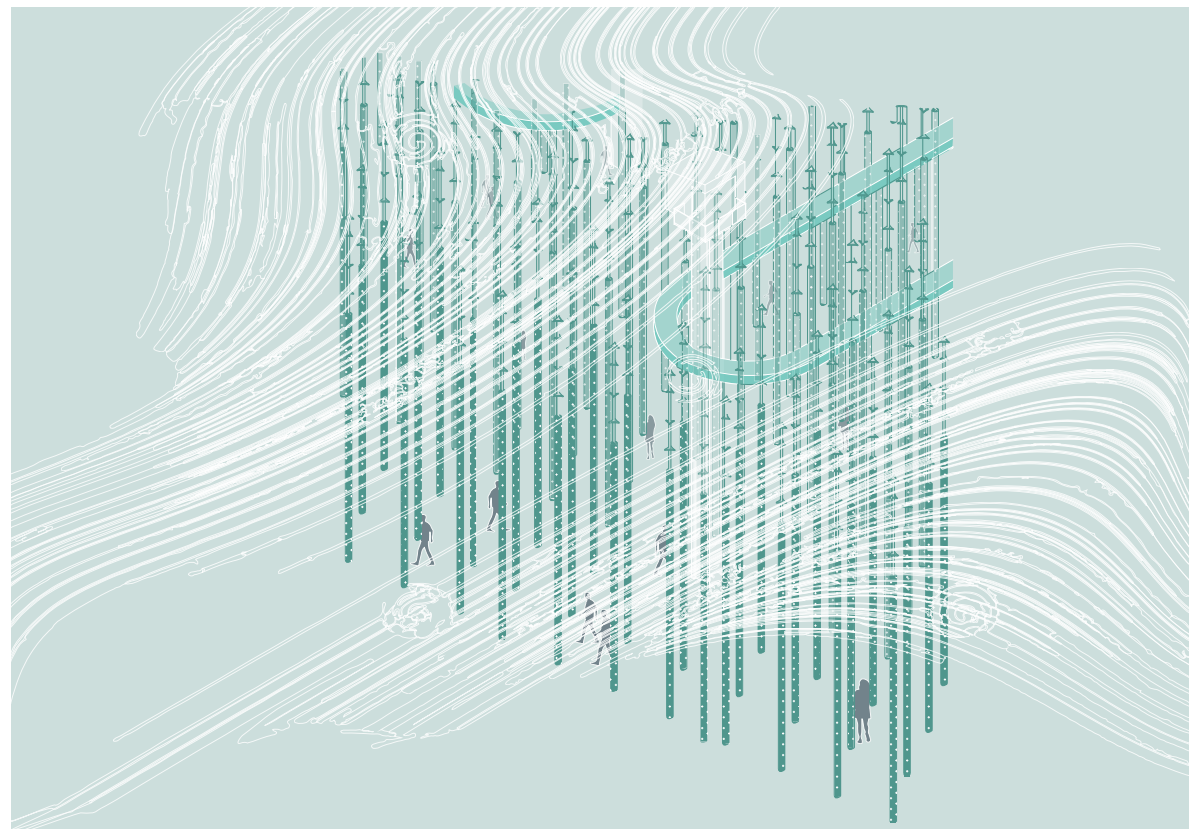




## BRIDGE-FORM: VANTAGE POINT HYBRID

*This hybrid is meant to address the lack of visual connection in the site. In the original typologies, both the bridge and the platform sit on "legs" or piers in the city. In the new hybrids, these legs elevate the viewer and bridge together the separate sky scrapers. At the smallest scale, the treehouse elevator becomes the "leg" and the treehouse itself is the aerial lookout in the city. In the medium scale, a vertical axis wind farm becomes the "legs" that support a winding platform that knits together the various treehouses from the small scale hybrid. At its largest scale, the existing buildings and a larger treehouse become the "legs" with the suspension bridge knitting the two together.*





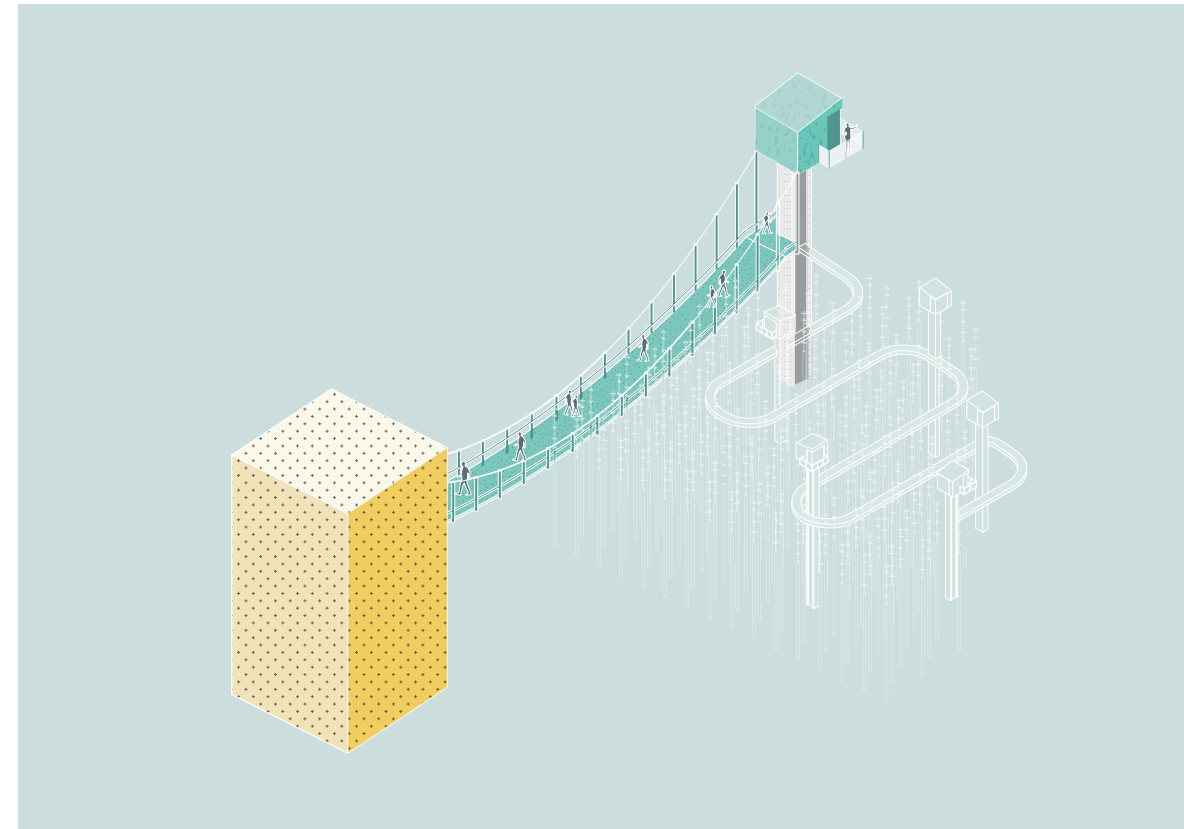
Both the bridge and the platform sit on structural piers or "legs" in the city. In the medium scale, the wind farm becomes the "legs" that support a winding platform that knits together the various treehouses from the small scale Bridge-Form

Currently the Redpath Factory runs on natural gas; the wind farm would allow the factory to operate on a more sustainable, clean energy source

A typical wind farm, with a three fin turbine could not generate enough energy as it would be reliant on single directional winds and would have to be extremely large, thus blocking views

However, a vertical axis wind farm (similar to the one deployed by Stoss in their Energy Forest in Pittsburgh) can be shorter, smaller, and more efficient since it can generate power from winds coming in all directions

## BRIDGE-FORM (m) as vantage point hybrid



Both the bridge and the platform sit on structural piers or "legs" in the city. In the large scale, the existing buildings and a larger treehouse become the "legs" with the suspension bridge knitting the two together

At its largest scale, this hybrid addresses the infrastructural and architectural divides, literally bridging over the highway & railway and connecting skyscrapers together

Its location on the site is key as it stands as a direct critique to the existing separated conditions of the city (juxtaposed to the east are clusters of skyscrapers blocking views and creating barriers to the waterfront

At all scales, this hybrid is meant to address the lack of **visual** connection in the site

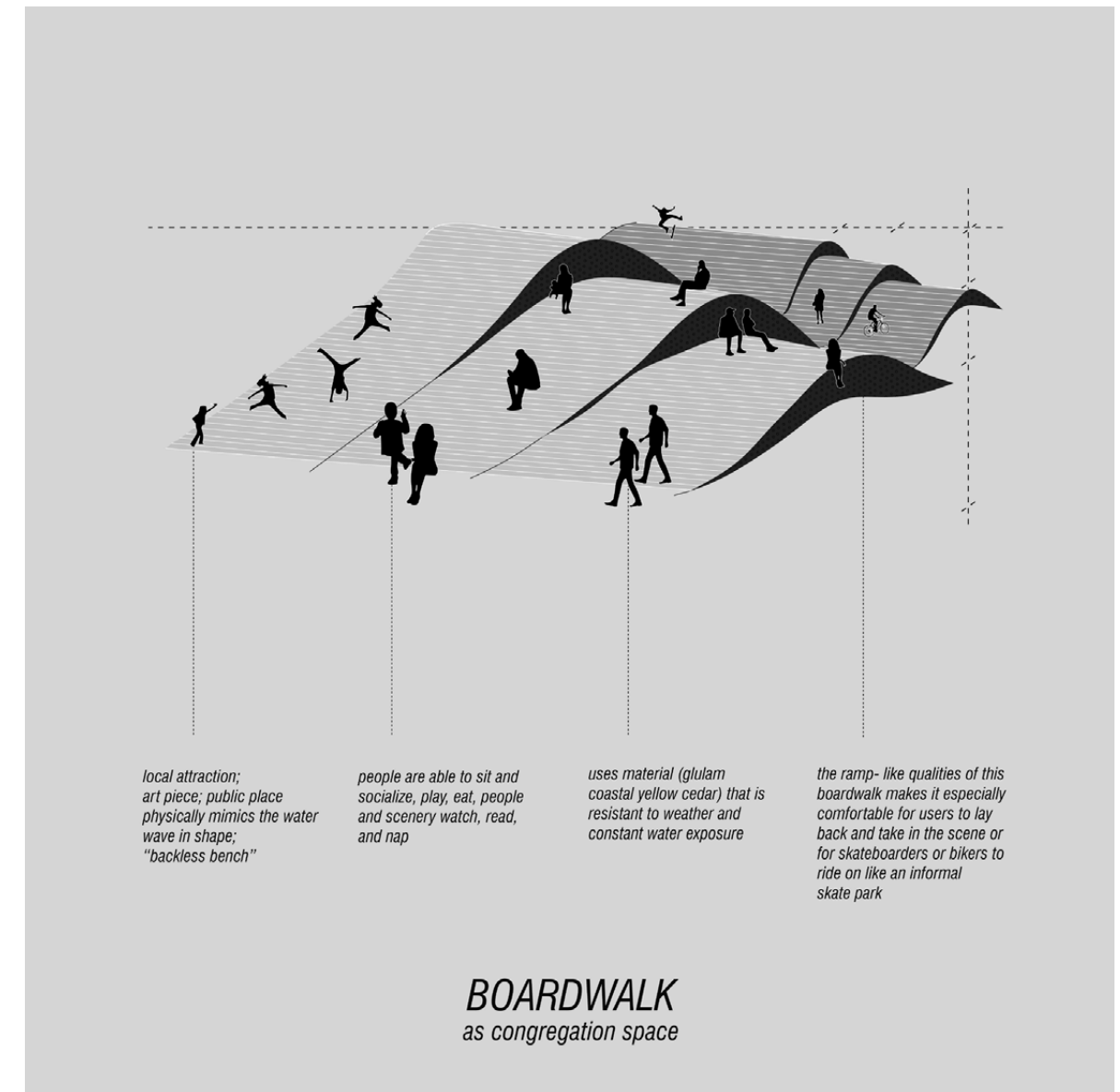
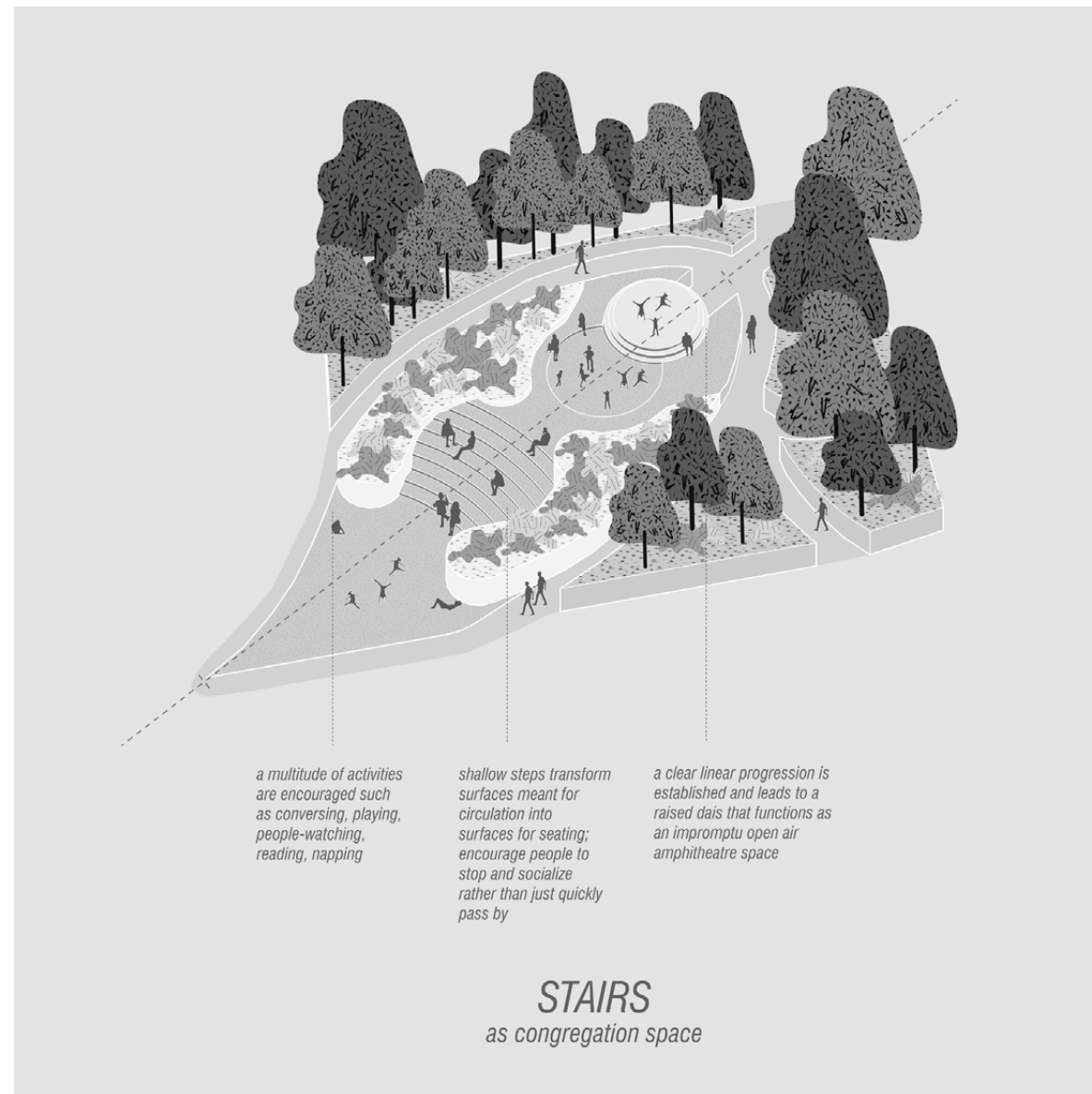
## BRIDGE-FORM (l) as vantage point hybrid





## ORIGINAL TYPOLOGIES FOR CONGREGATION SPACE HYBRID

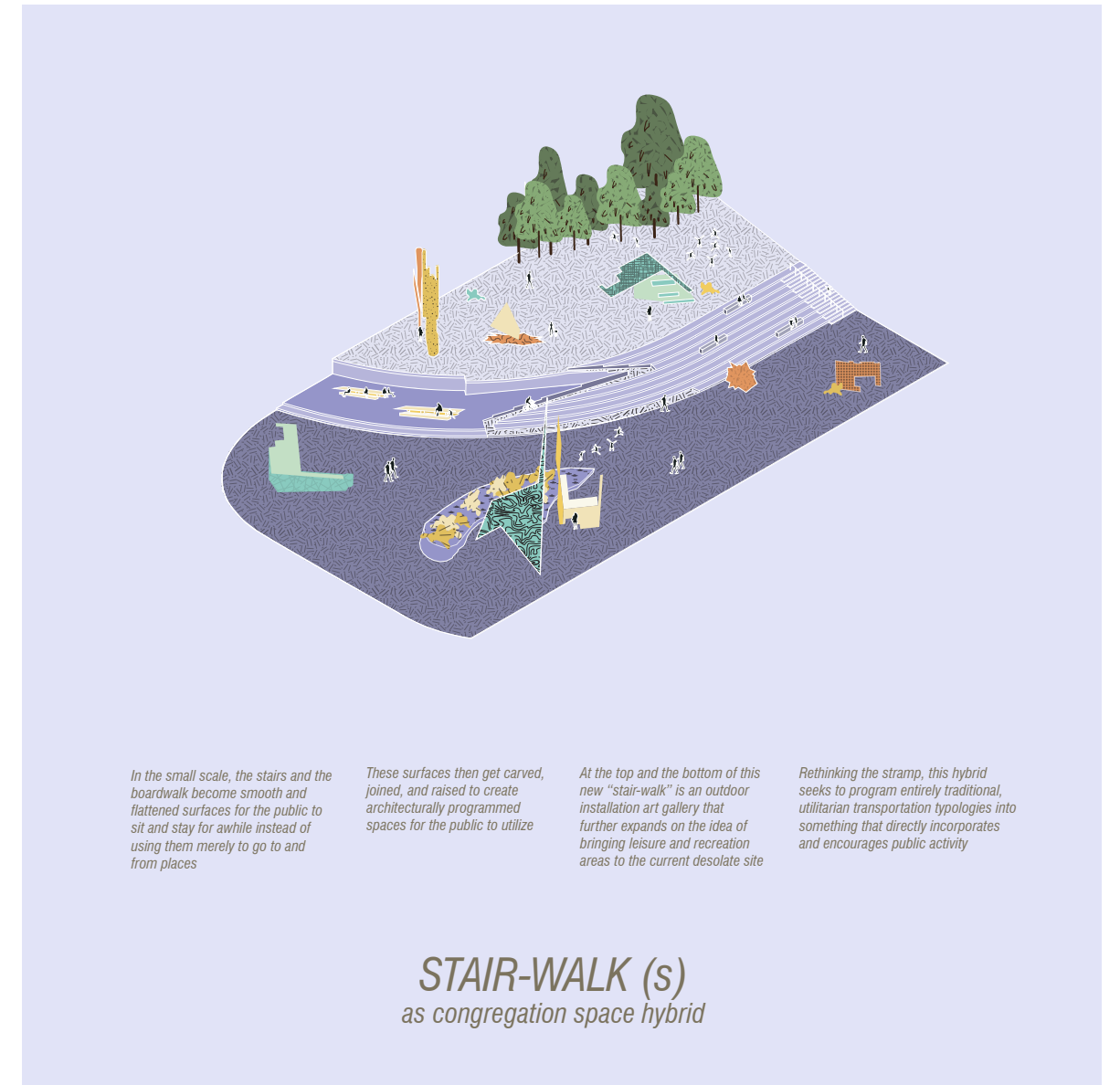
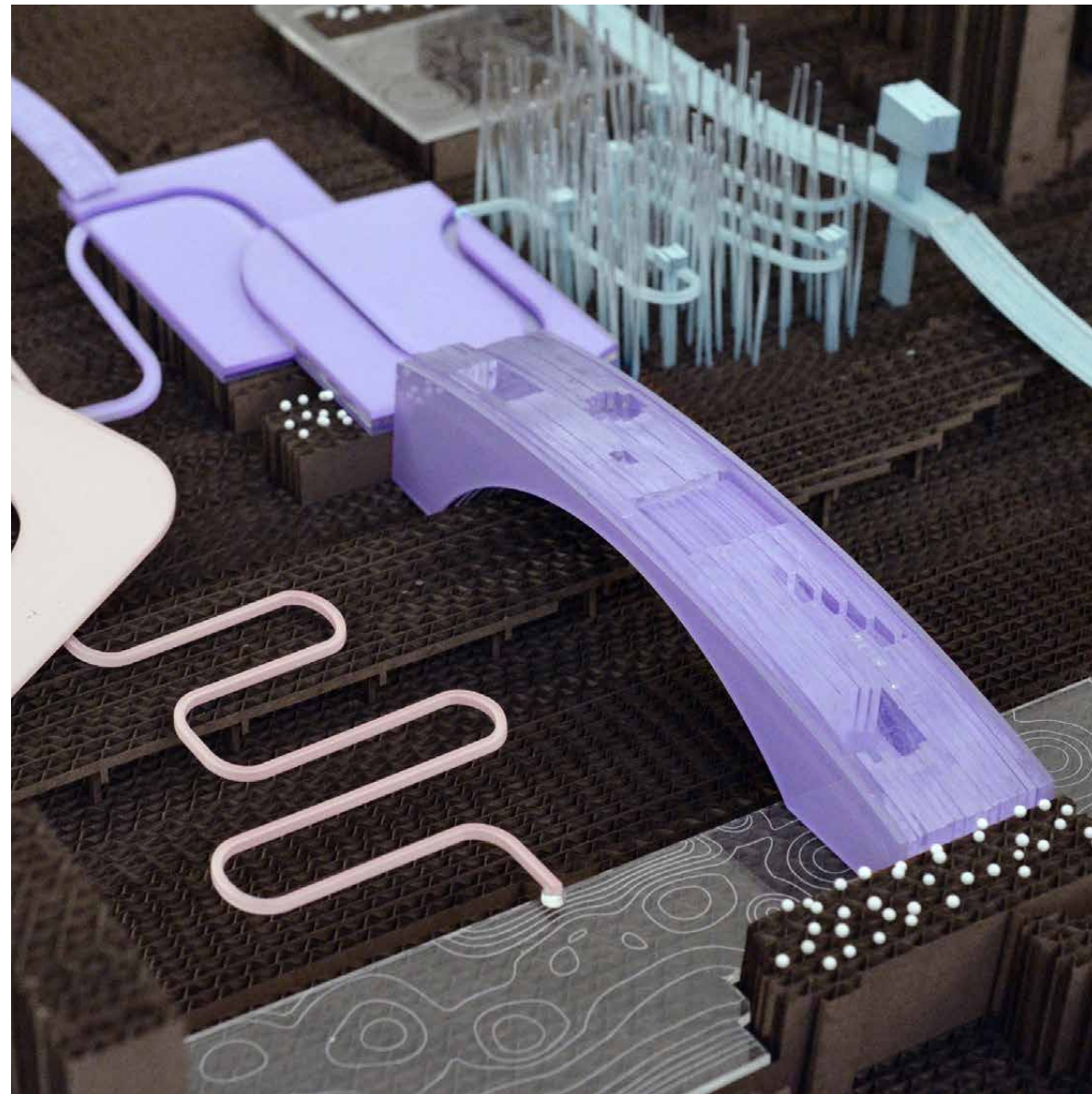
Both take the traditional utilitarian idea of circulation--- to get the user from one place to another--- and make it instead into a celebrated stationary object, that of the amphitheater. The steps are made shallow and flattened, and the ramp is smoothed into gradual sloping surfaces that invite users to pause and rest for awhile. Sitting, especially amongst the water and the park, encourages gathering and socializing. This hybrid begins to inform not only how to negotiate changes in level, but changes in program and use.



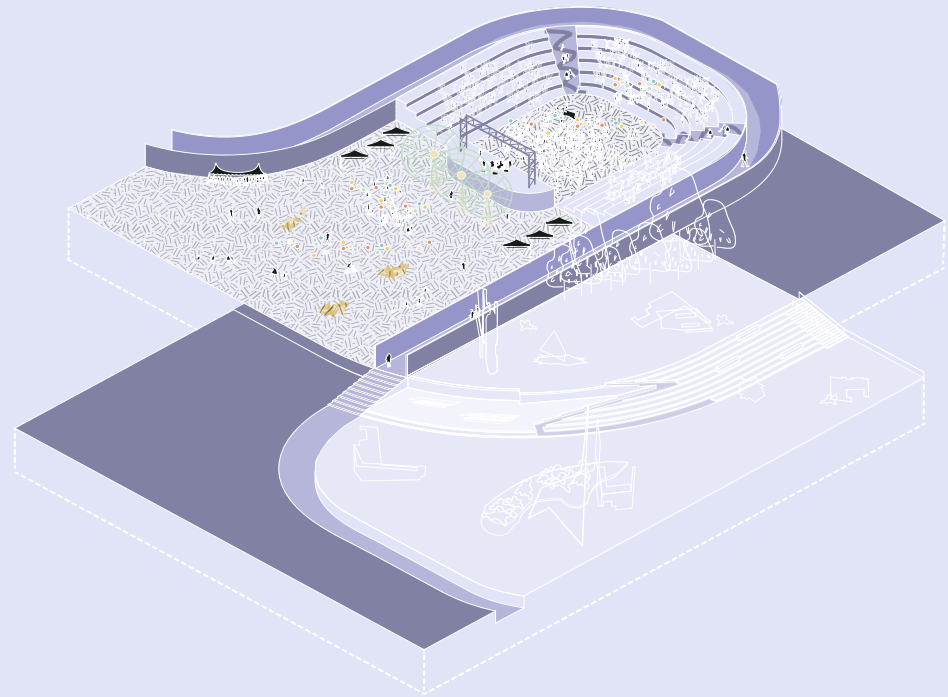


## STAIR-WALK: CONGREGATION SPACE HYBRID

*This hybrid is meant to address the lack of social connection in the site. Especially in this particular area, the existing site is a liquor warehouse and parking lots; both of which do not especially encourage the public to stay at the waterfront. In the original typologies, the stairs and the boardwalk were under-utilized as only means of transportation to get the user from one destination to another. In the new hybrids, the stairwalk transforms surfaces meant for movement into surfaces for stillness, or spaces where one would want to sit, stay, and socialize rather than quickly pass by. At the smallest scale, the surfaces smooth and flatten into seating and the ground becomes landscaped into an outdoor art installation gallery. At the medium scale, the surface gets carved and raised to create an amphitheatre. At its largest scale, the stairwalk becomes a 'playbridge' supported on one side by an abandoned warehouse and notching into the small and medium scale stairwalks on the other side. No surface is left untouched as even underneath the underpass gets repurposed for leisure and recreation.*







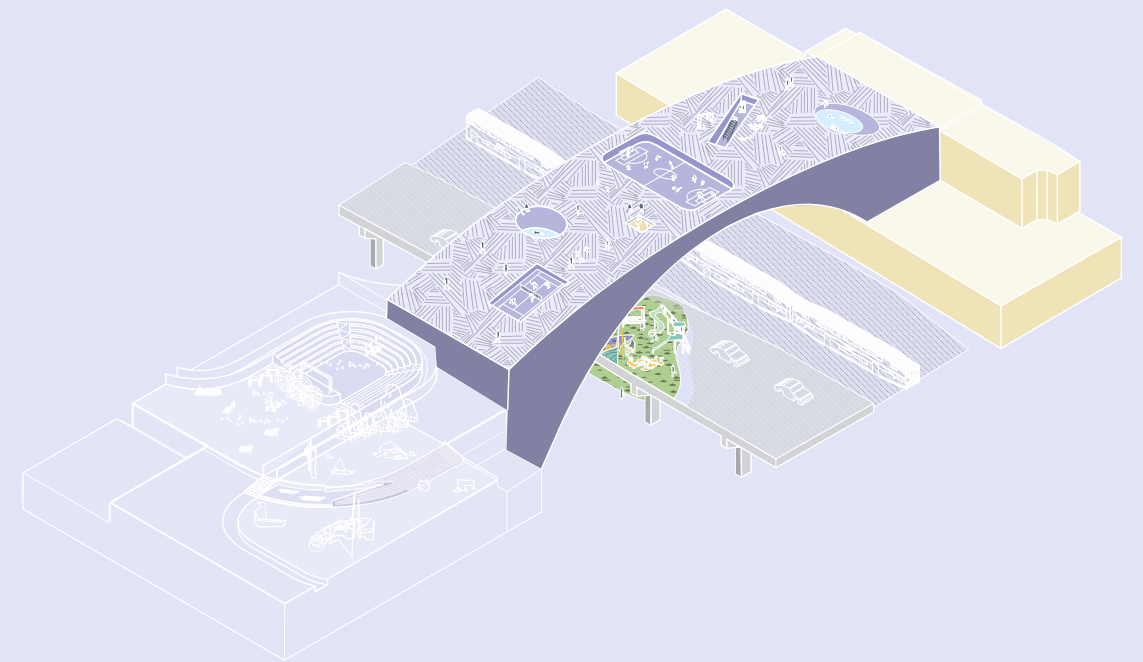
*In the medium scale, the heavily programmed "stair-walk" gets literally bigger and becomes an amphitheatre, keeping the zig-zag stramp language in the aisles*

*The amphitheatre spills out into open landscape reminiscent of large music festival grounds*

*Curved exterior circulation wraps around the amphitheatre and connects it to the small scale "stair-walk"*

*This exterior circulation path continues the curves created by the vantage point hybrid and mimics the radial curvature of the highway crossing through the site*

## **STAIR-WALK (m)** as congregation space hybrid



*In the large scale, the heavily programmed "stair-walk" gets bigger yet again and becomes a "playbridge." Like the small scale version of the "stair-walk", the connector itself is formed in such a way to spatialize leisure and recreation activities*

*People are able to swim, play in the sports courts & playgrounds or simply use it to cross the largest infrastructural divides on the site*

*This hybrid is supported on one side by an abandoned warehouse and notches into the small and medium scale "stair-walks" on the other side. No surface is left untouched as even underneath the underpass gets repurposed for leisure and recreation*

*At all scales, this hybrid is meant to address the lack of **social** connection in the site*

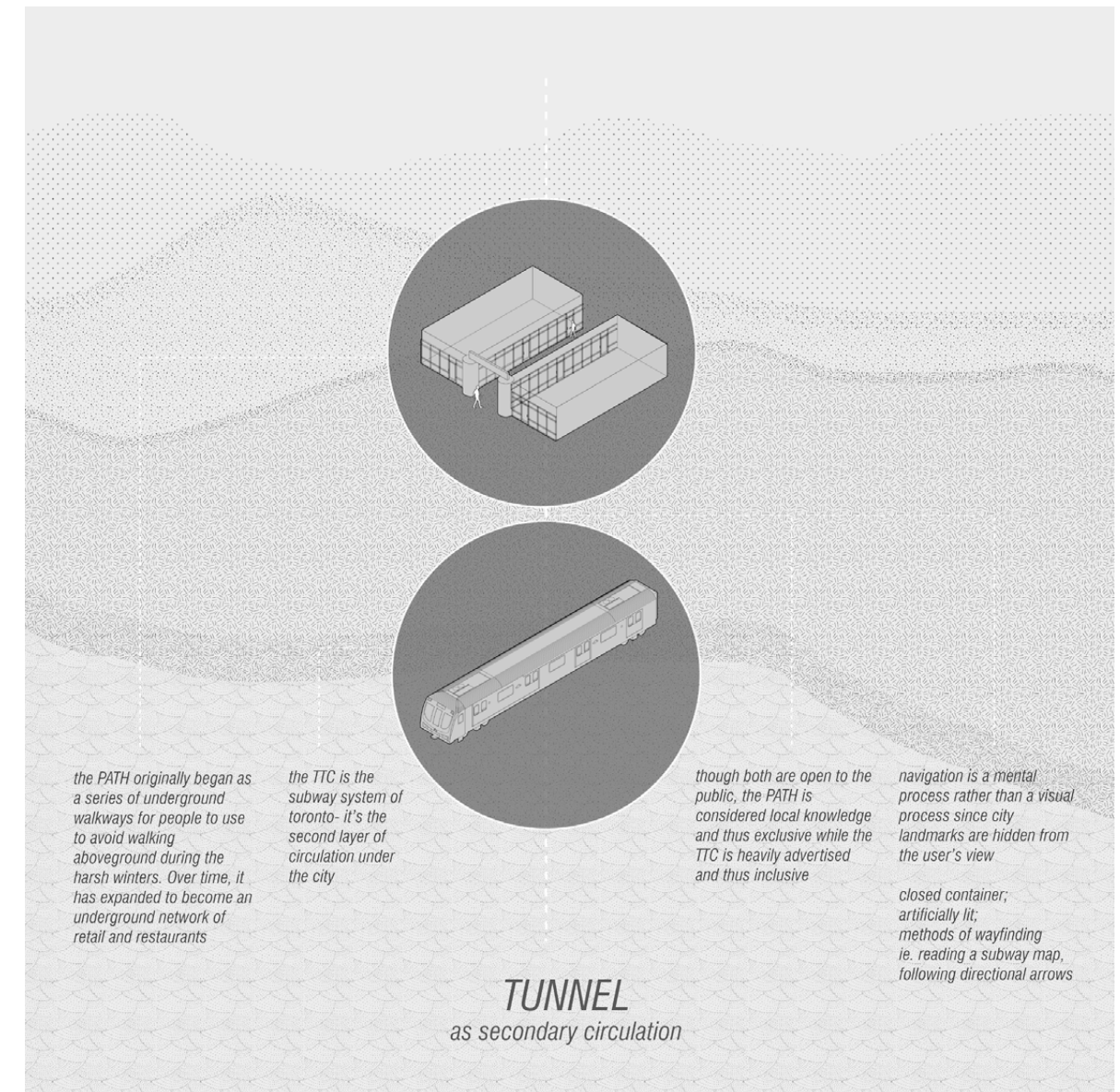
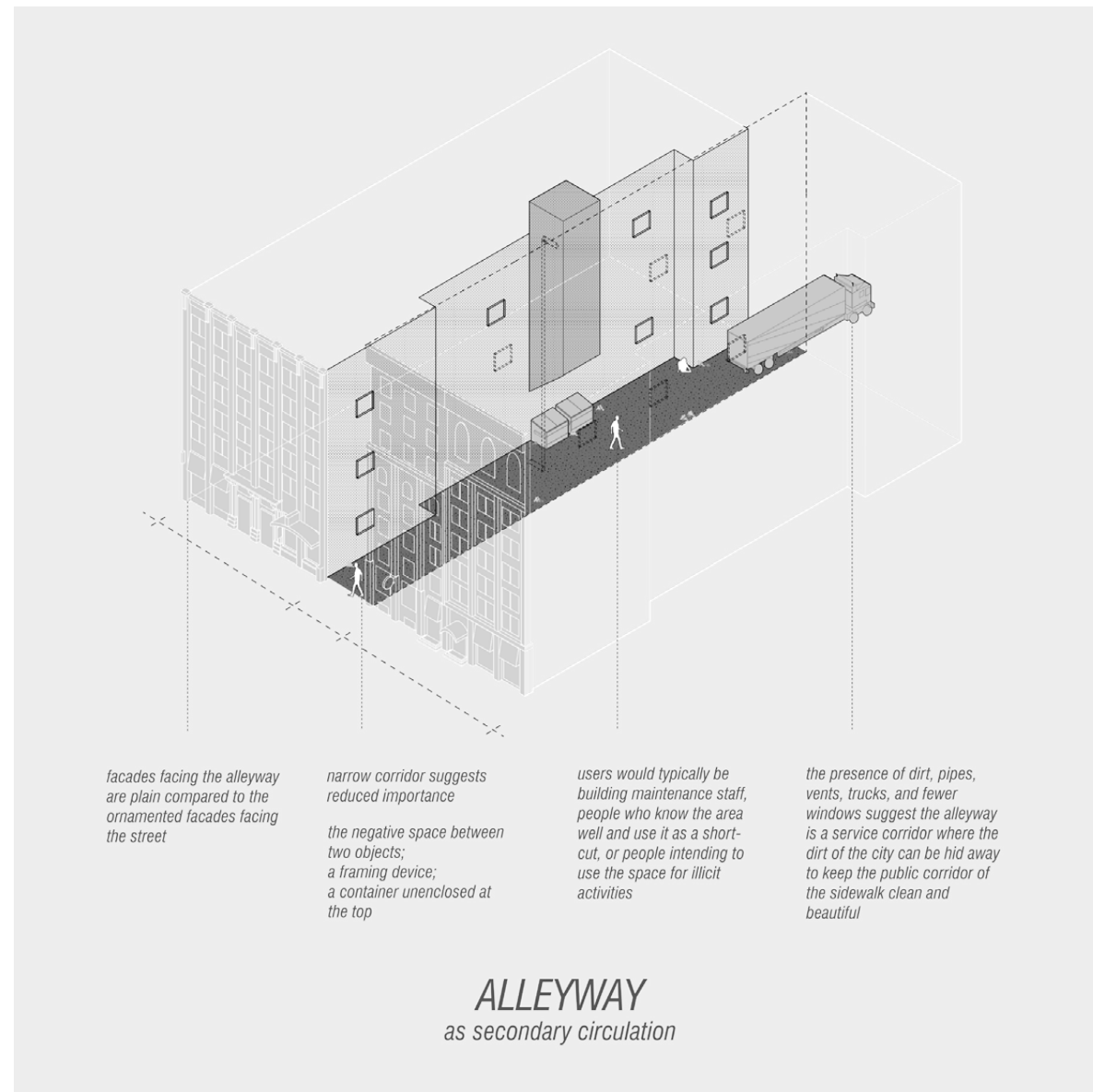
## **STAIR-WALK (l)** as congregation space hybrid





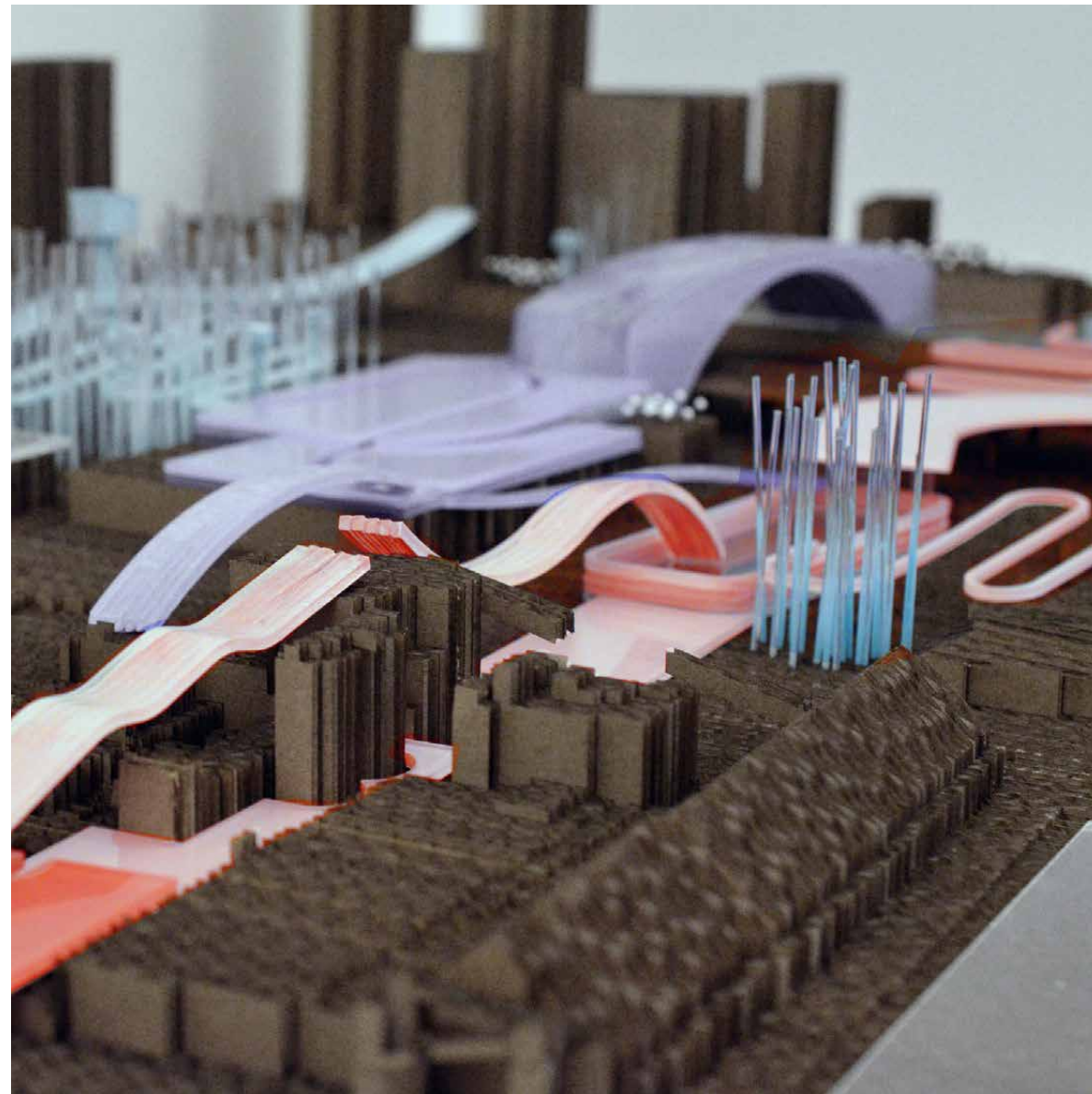
## ORIGINAL TYPOLOGIES FOR SECONDARY CIRCULATION HYBRID

Both are forms of secondary circulation but the treatment of both are radically different. One is dingy and not desirable to be in while the other actively lures people to inhabit its space. This hybrid begins to inform a hierarchy in circulation and explores the idea of the underground. It should be noted that the tunnel is actually a triple-layered entity in Toronto and already begins to hybridize urban and aqueous: the first layer (PATH- pedestrian walkway) and the second layer (subway) belong to the urban sphere but the third layer exists only at the water's edge to connect the waterfront to the Billy Bishop Airport.

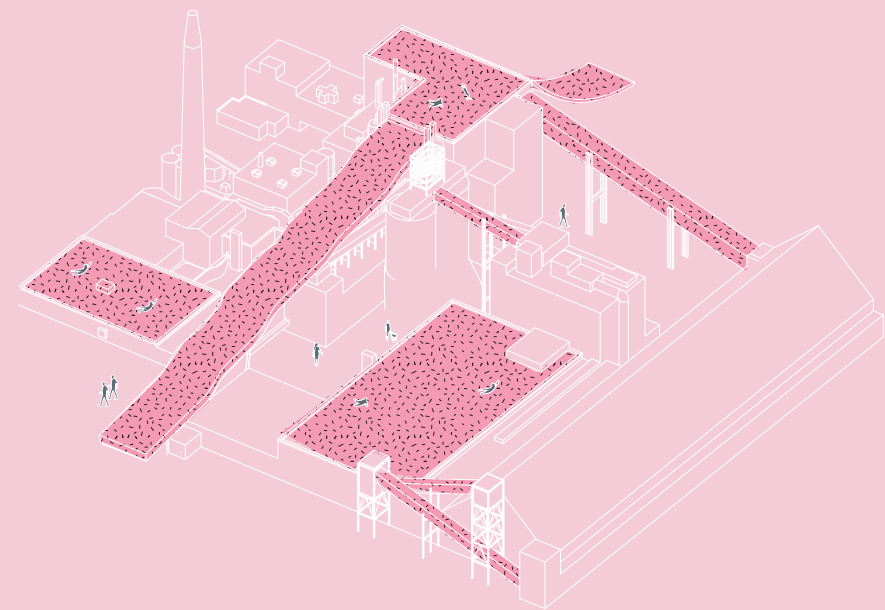


## TUNNEL-WAY: SECONDARY CIRCULATION HYBRID

*This hybrid is meant to address the lack of aquatic connection in the site. In the original typologies, both the alleyway and the tunnel are treated as unimportant, secondary spaces in the city but are in fact, necessary for a city to operate. Likewise, water is considered secondary to ground circulation but especially in a waterfront project, it should become a prioritized form of circulation, which is why at its largest scale, this hybrid concerns itself with creating a canal system that stems from the northern-most edge of the site all the way to the water's edge. It also hosts a waterfall, streams for kayakers, and bathing pools on top of the repurposed Redpath factory. At the smallest scale, tunnel-way manifests itself as change rooms that insert themselves in the nooks and crannies created by the factory infrastructure. At the medium scale, the hybrid becomes a double layered path where the primary path (bathing) is put in frequently overlooked places, such as roofs and ramps.*





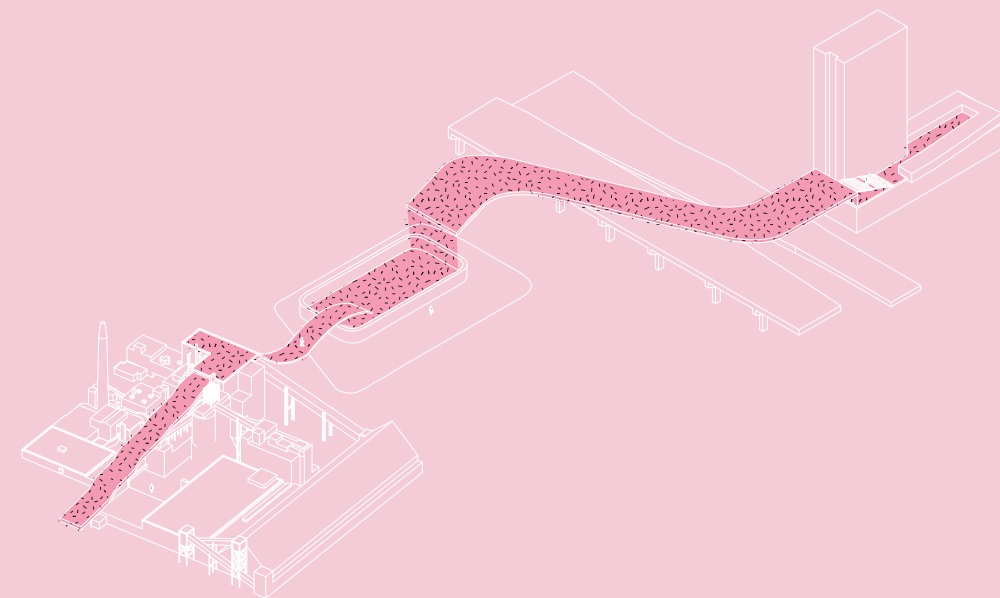


*At the medium scale, the Tunnel-Way hybrid becomes a double layered path where the primary path (bathing) acts as the place where people actively want to be in, and the secondary path (changerooms) act as the primary path's service space, or a place that is frequently overlooked for its banality, but in reality is quite important for the overall program to function.*

*Taking inspiration from the circulation path the sugar goes through to be refined in the factory, a similar path was created for the thermal pools.*

*The language of the factory infrastructure (distribution ramps, conveyor belts, etc) is used to connect the pools.*

**TUNNEL-WAY (m)**  
as secondary circulation hybrid



*At its largest scale, the tunnel-way looks to prioritize the secondary mode of circulation (in this case water) as a primary concern.*

*Ground circulation is generally prioritized in urban conditions, but when the urban condition is situated on water, both should be taken into account.*

*This hybrid is also the largest of the four and uses the canal system to connect over all three infrastructural and architectural divides.*

*At all scales, this hybrid is meant to address the lack of aquatic connection in the site*

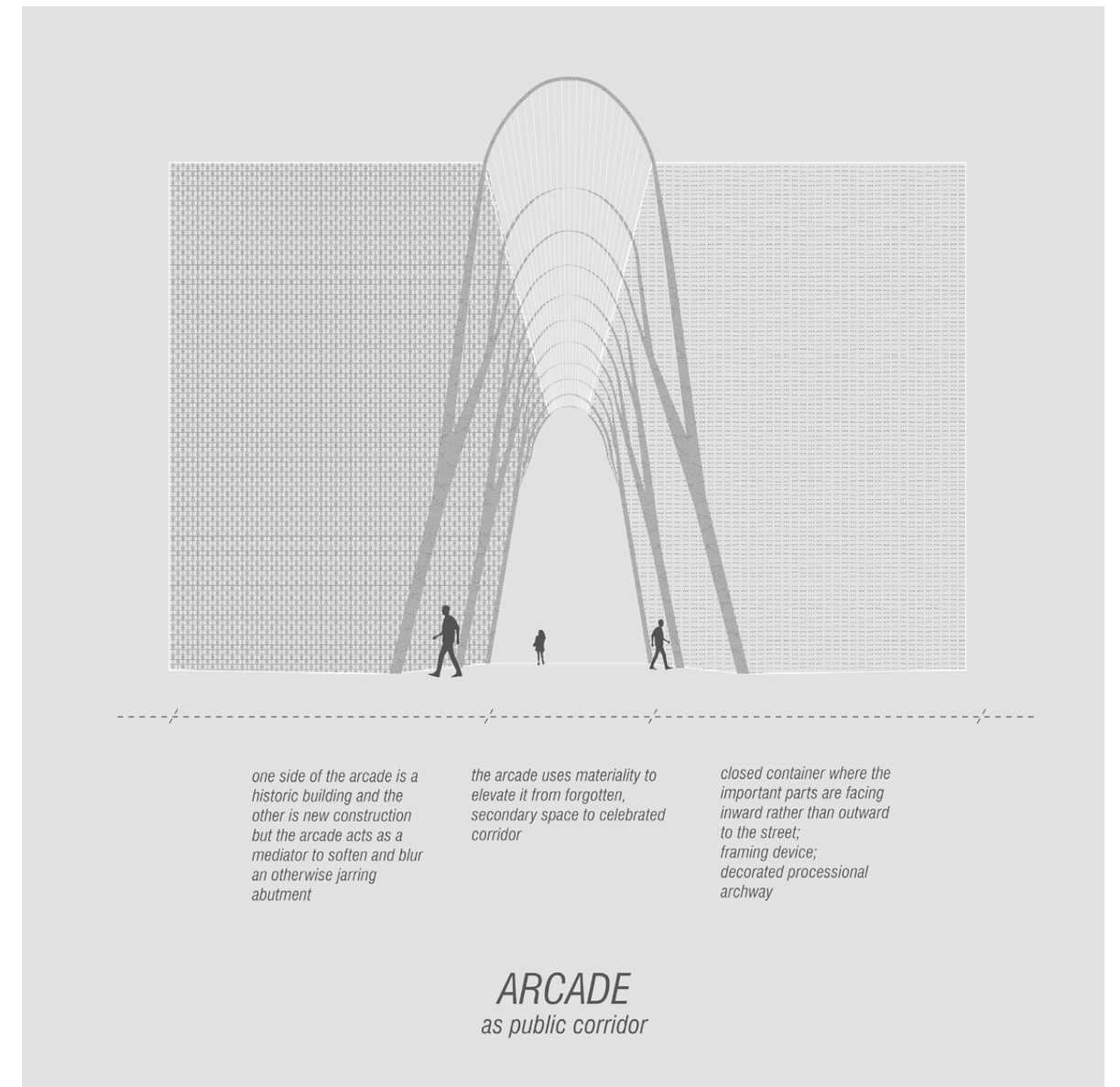
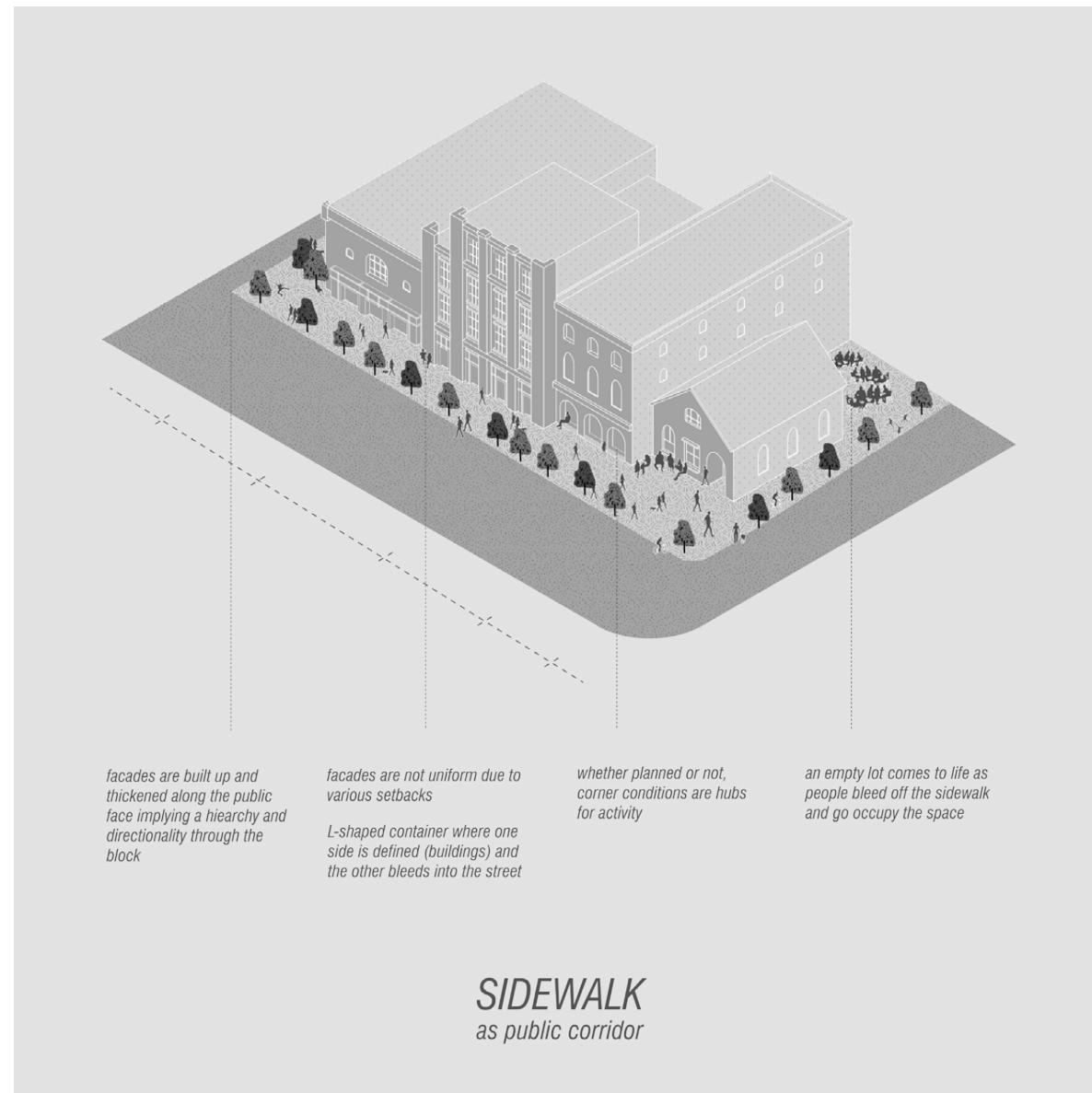
**TUNNEL-WAY (l)**  
as secondary circulation hybrid





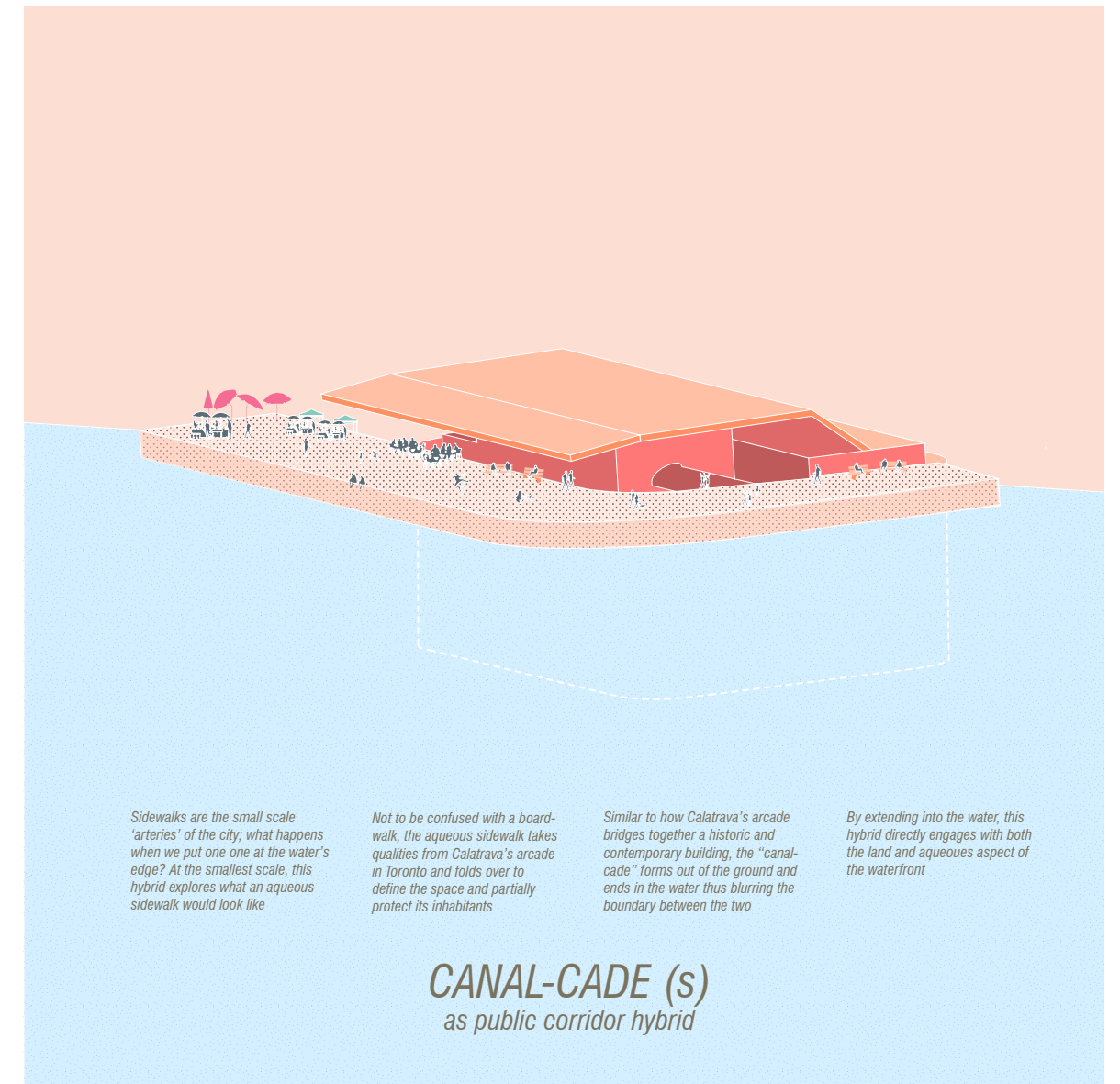
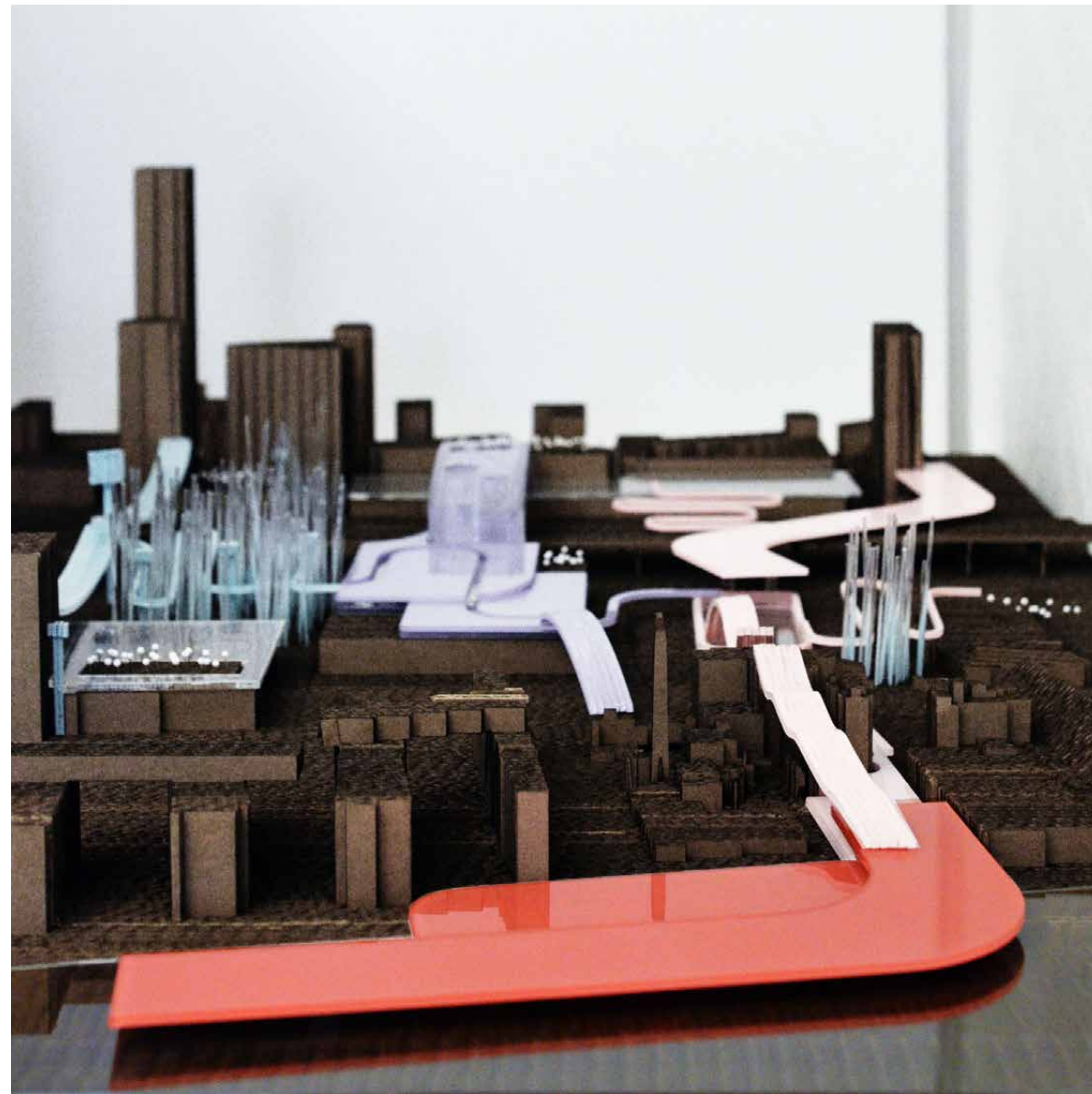
## ORIGINAL TYPOLOGIES FOR SECONDARY CIRCULATION HYBRID

Both act as a concentrated container for public activity. The arcade is easily defined by a physical presence on all four sides plus roof and floor while the sidewalk is defined by a thickened edge from the building facades and the street but very loosely, or not defined at all, by the sky and possible facing street- the shape of the sidewalk container changes if the buildings on either side of the street are not of relative equal height. The arcade is also made up on surfaces that primarily face inward while the sidewalk is made up of surfaces that primarily face outward. This hybrid begins to inform an idea of bridging two separate entities- in the case of the arcade, the Allen Lambert Galleria was specifically created to mediate between a historic building and a contemporary one.

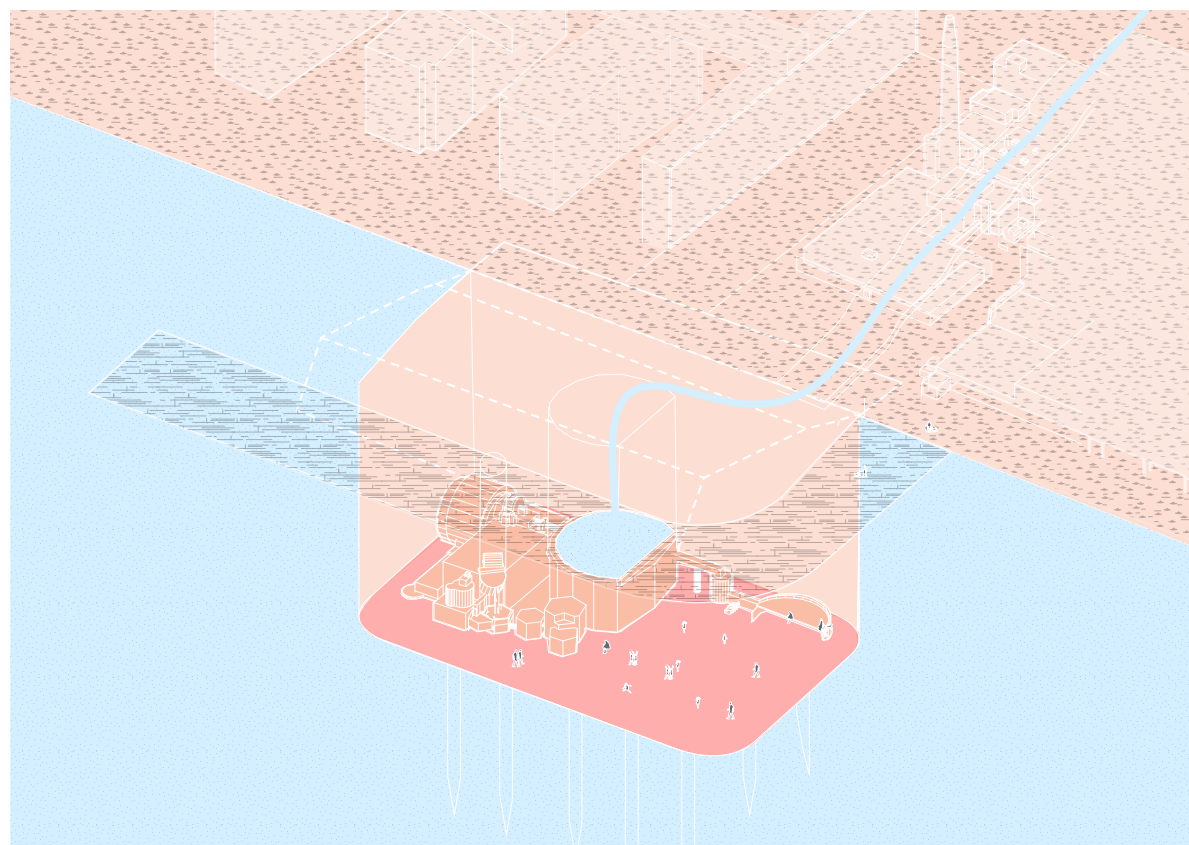


## CANAL-CADE: PUBLIC CORRIDOR HYBRID

*This hybrid is meant to address the lack of physical connection in the site. Sidewalks are the small scale 'arteries' of the city; what happens when we put one one at the water's edge? At the smallest scale, this hybrid explores what an aqueous sidewalk would look like. Not to be confused with a boardwalk, the aqueous sidewalk takes qualities from Calatrava's arcade in Toronto and folds over to define the space and partially protect its inhabitants. At the medium scale, this hybrid forms a literal container of public activity underwater- a museum that doubles as a filtration plant. The museum is a nod to the existing museum that the Redpath factory has. It works very well to educate the public on the sugar industry; likewise this hybrid's museum would serve to educate the public on the issues of waste water management and pollution of Lake Ontario. The aqueous sidewalk wrapping around this new building creates a second skin or layer of public activity that further concentrates liveliness at the water's edge. At its largest scale, the canal-cade looks to connect the public with more than just the immediate waterfront edge. The aqueous sidewalk doubles as a harbour for kayaks and water taxis. This hybrid also looks to extend further into the city. It creates a corridor between the edge of the Redpath factory and the existing mixed-use complex to create an inviting, wayfinding path that draws interest from passerbys.*







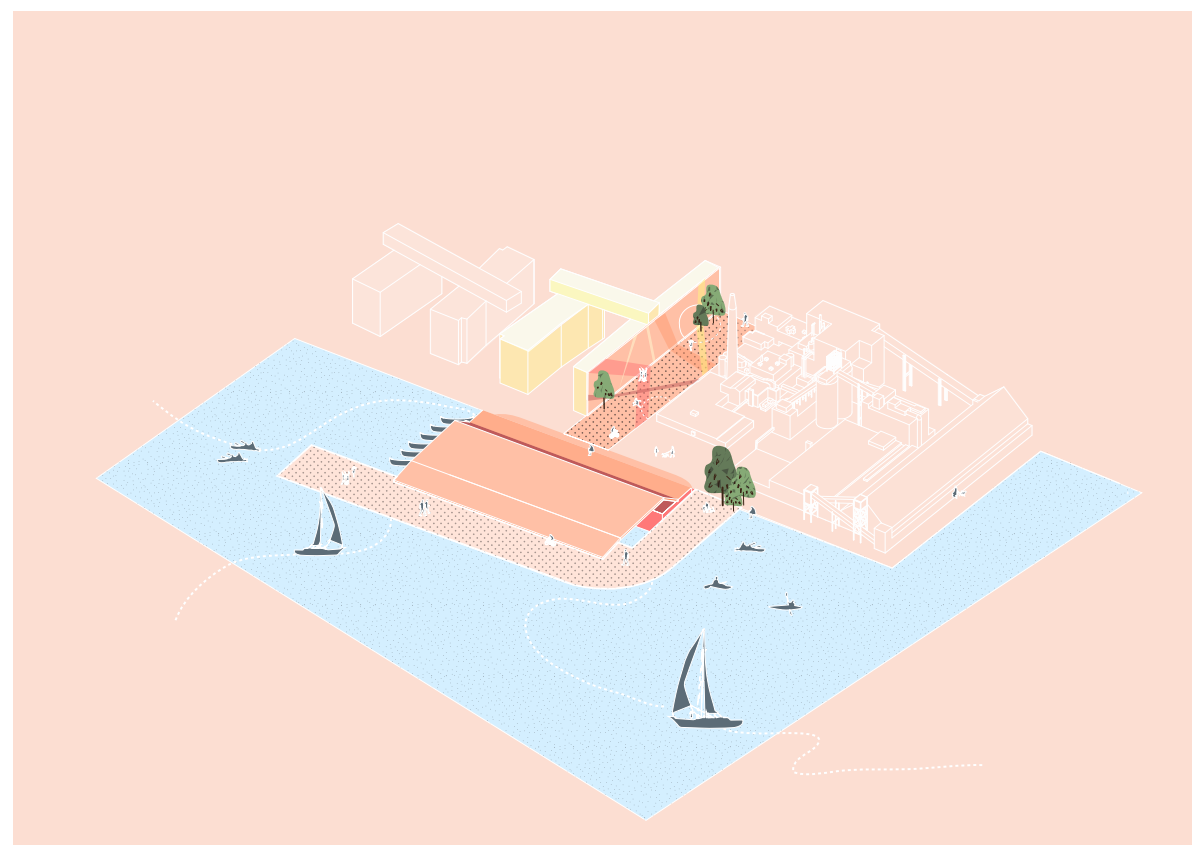
*At the medium scale, this hybrid forms a literal container of public activity underwater- a museum that doubles as a filtration plant*

*The museum is a nod to the existing museum that the Redpath factory has. It works very well to educate the public on the sugar industry; likewise this hybrid's museum would serve to educate the public on the issues of waste water management and pollution of Lake Ontario*

*The canal that services the secondary circulation hybrid at the northern-most end of this project gently slopes down and ends in the filtration plant where the water is cleaned and filtered back for public use*

*The aqueous sidewalk wrapping around this new building creates a second skin or layer of public activity that further concentrates liveliness at the water's edge*

**CANAL-CADE (m)**  
as public corridor hybrid



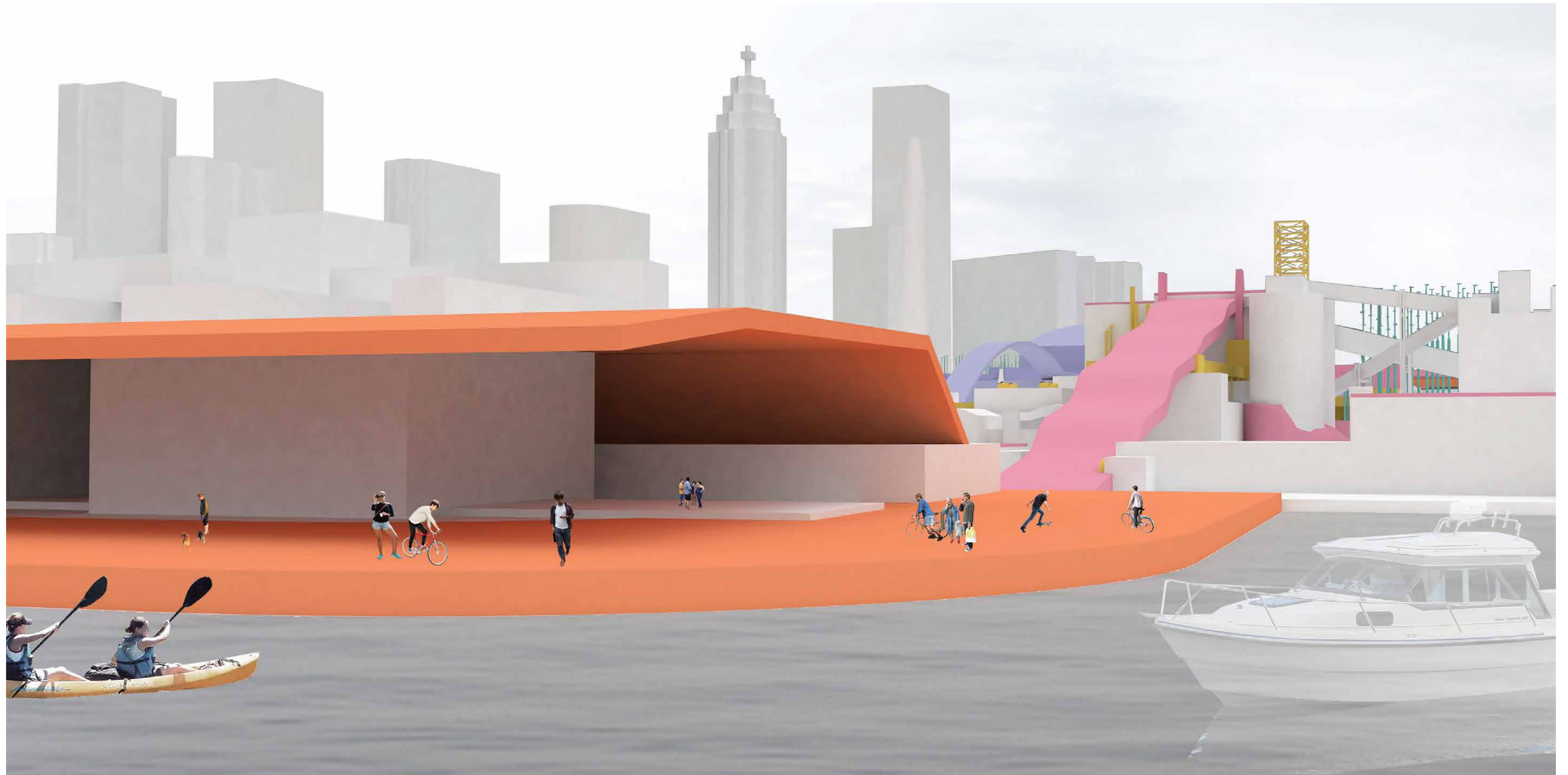
*At its largest scale, the canal-cade looks to connect the public with more than just the immediate waterfront edge. The aqueous sidewalk doubles as a harbour for kayaks and water taxis*

*In the summer, taking a ferry across to the Toronto Islands is a popular pastime. Given the ferry's limited schedule, the introduction of water taxis would help fill that need*

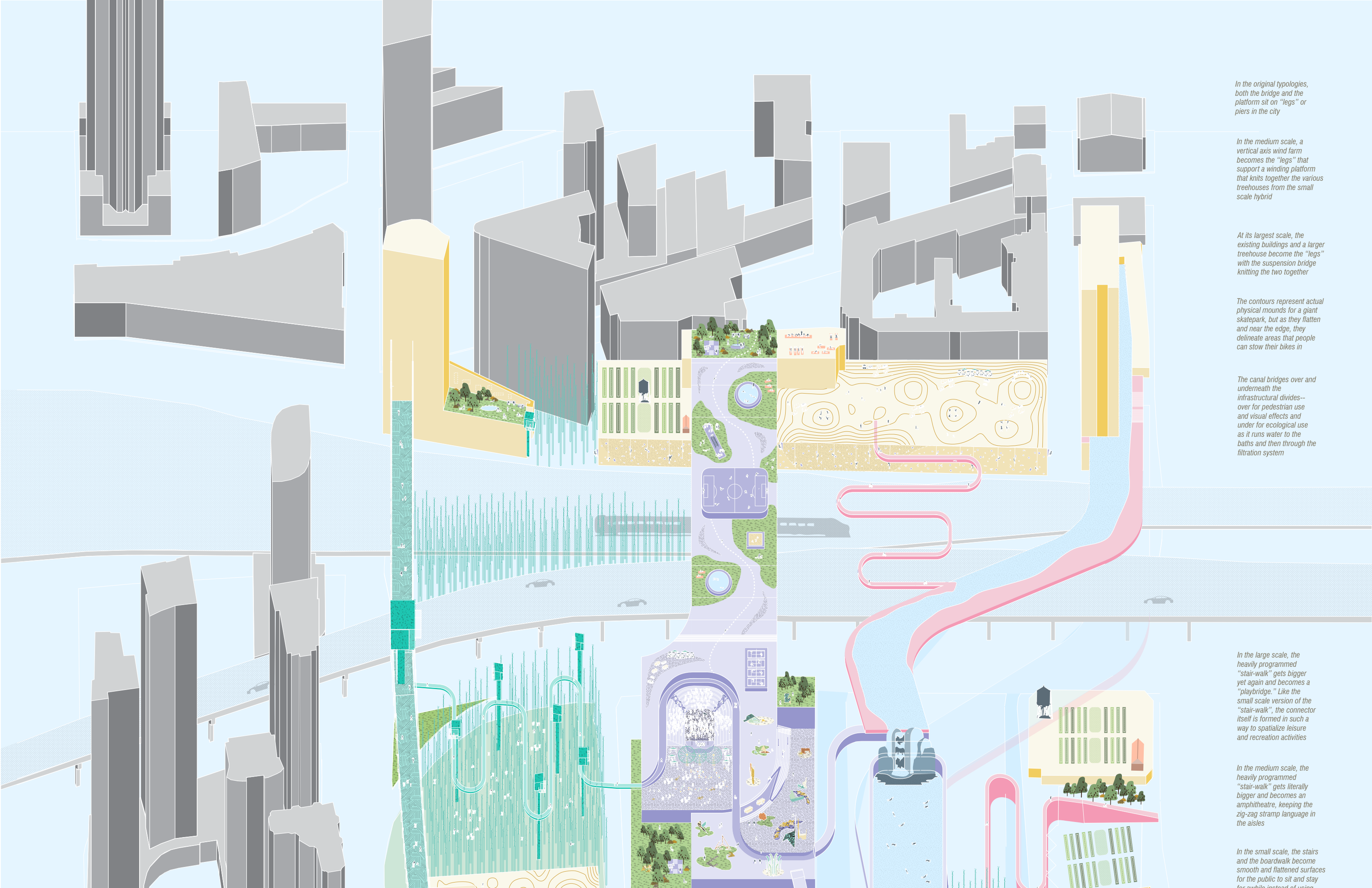
*This hybrid also looks to extend further into the city. It creates a corridor between the edge of the Redpath factory and the existing mixed-use complex to create an inviting, wayfinding path that draws interest from passerbys*

*At all scales, this hybrid is meant to address the lack of physical connection in the site*

**CANAL-CADE (l)**  
as public corridor hybrid







*In the original typologies, both the bridge and the platform sit on "legs" or piers in the city*

*In the medium scale, a vertical axis wind farm becomes the "legs" that support a winding platform that knits together the various treehouses from the small scale hybrid*

*At its largest scale, the existing buildings and a larger treehouse become the "legs" with the suspension bridge knitting the two together*

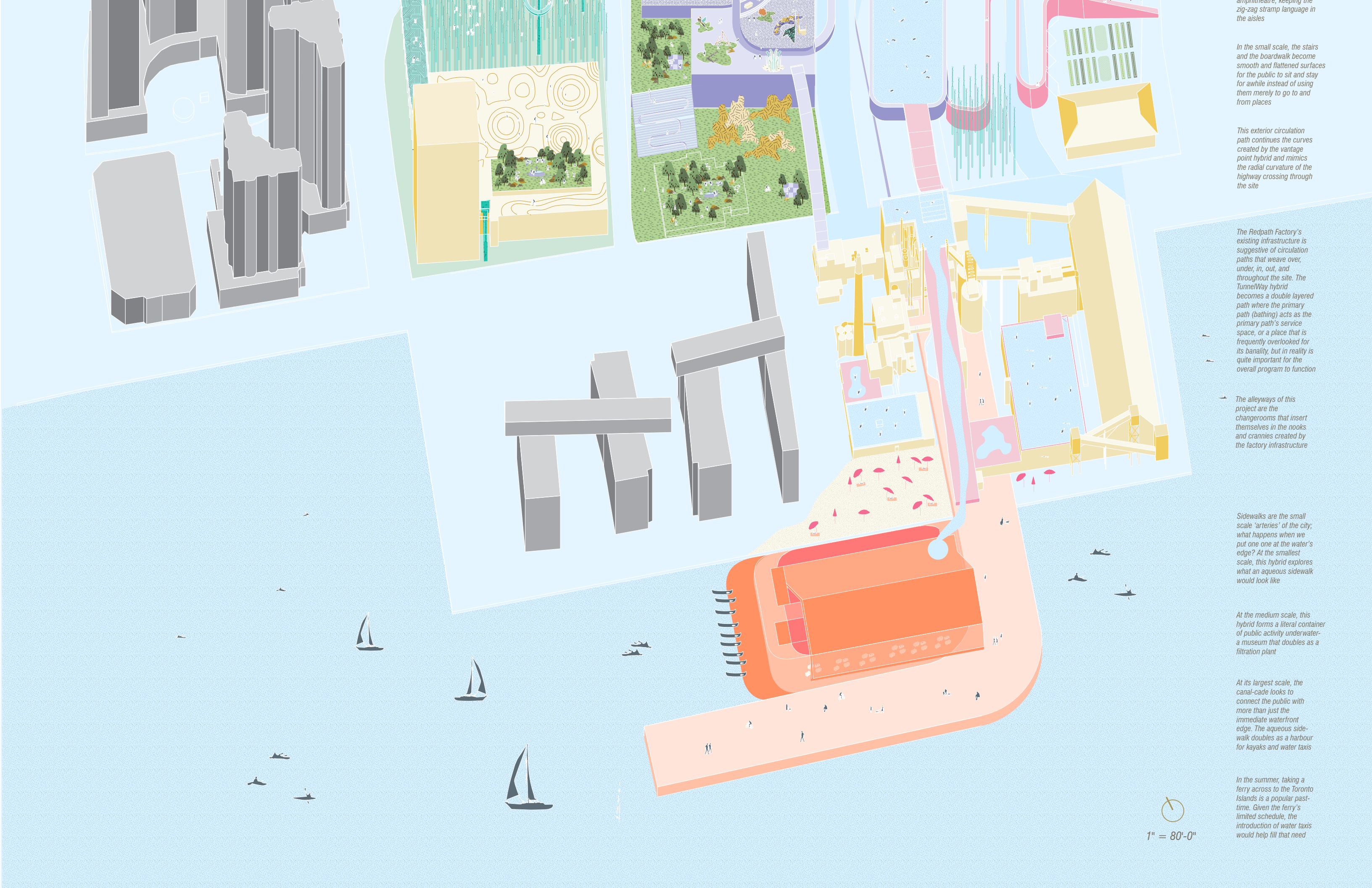
*The contours represent actual physical mounds for a giant skatepark, but as they flatten and near the edge, they delineate areas that people can stow their bikes in*

*The canal bridges over and underneath the infrastructural divides-- over for pedestrian use and visual effects and under for ecological use as it runs water to the baths and then through the filtration system*

*In the large scale, the heavily programmed "stair-walk" gets bigger yet again and becomes a "playbridge." Like the small scale version of the "stair-walk", the connector itself is formed in such a way to spatialize leisure and recreation activities*

*In the medium scale, the heavily programmed "stair-walk" gets literally bigger and becomes an amphitheatre, keeping the zig-zag stramp language in the aisles*

*In the small scale, the stairs and the boardwalk become smooth and flattened surfaces for the public to sit and stay for awhile instead of using*



amplified, keeping the zig-zag stamp language in the aisles

In the small scale, the stairs and the boardwalk become smooth and flattened surfaces for the public to sit and stay for awhile instead of using them merely to go to and from places

This exterior circulation path continues the curves created by the vantage point hybrid and mimics the radial curvature of the highway crossing through the site

The Redpath Factory's existing infrastructure is suggestive of circulation paths that weave over, under, in, out, and throughout the site. The TunnelWay hybrid becomes a double layered path where the primary path (bathing) acts as the primary path's service space, or a place that is frequently overlooked for its banality, but in reality is quite important for the overall program to function

The alleyways of this project are the changerooms that insert themselves in the nooks and crannies created by the factory infrastructure

Sidewalks are the small scale "arteries" of the city; what happens when we put one one at the water's edge? At the smallest scale, this hybrid explores what an aqueous sidewalk would look like

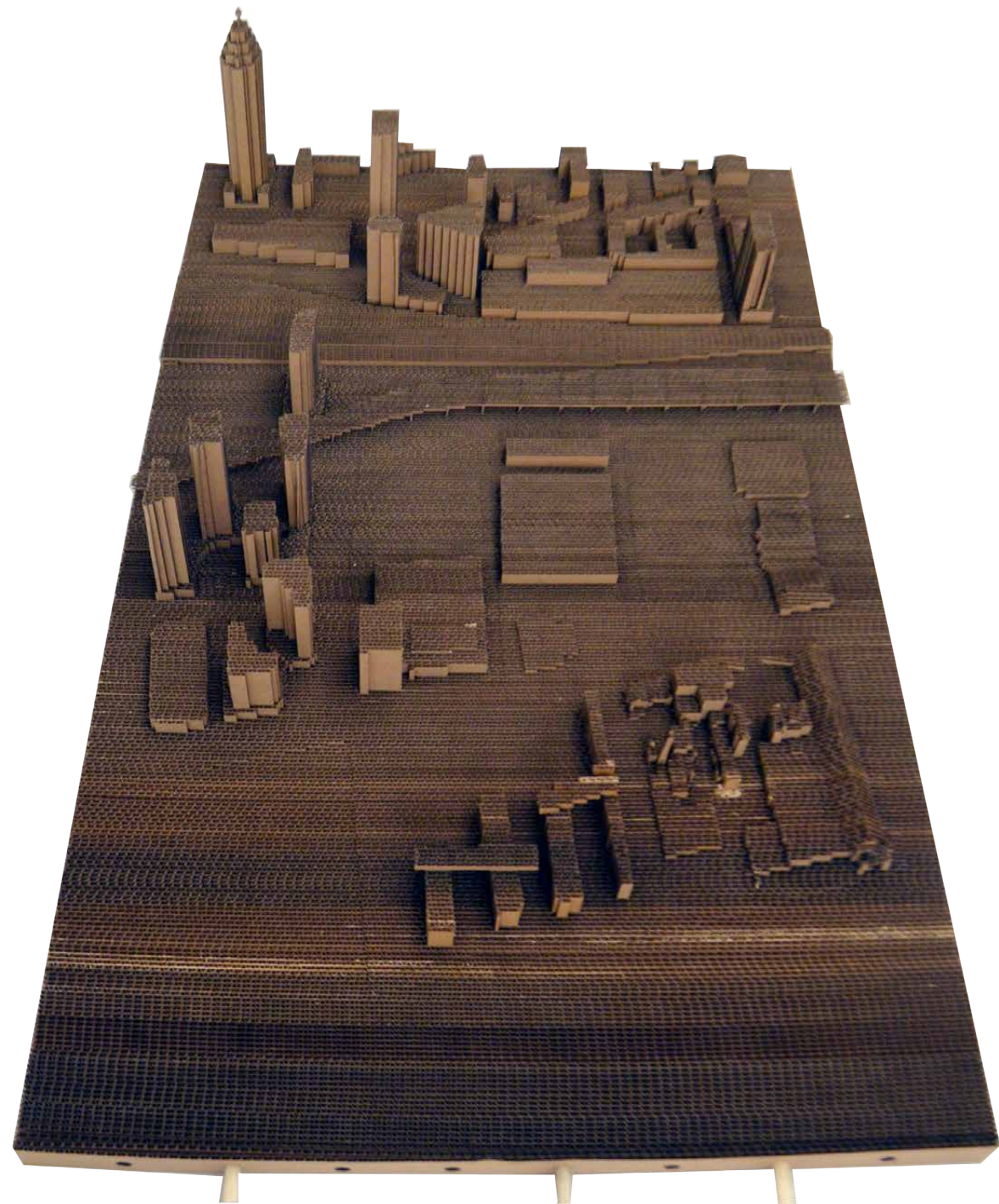
At the medium scale, this hybrid forms a literal container of public activity underwater- a museum that doubles as a filtration plant

At its largest scale, the canal-cade looks to connect the public with more than just the immediate waterfront edge. The aqueous sidewalk doubles as a harbour for kayaks and water taxis

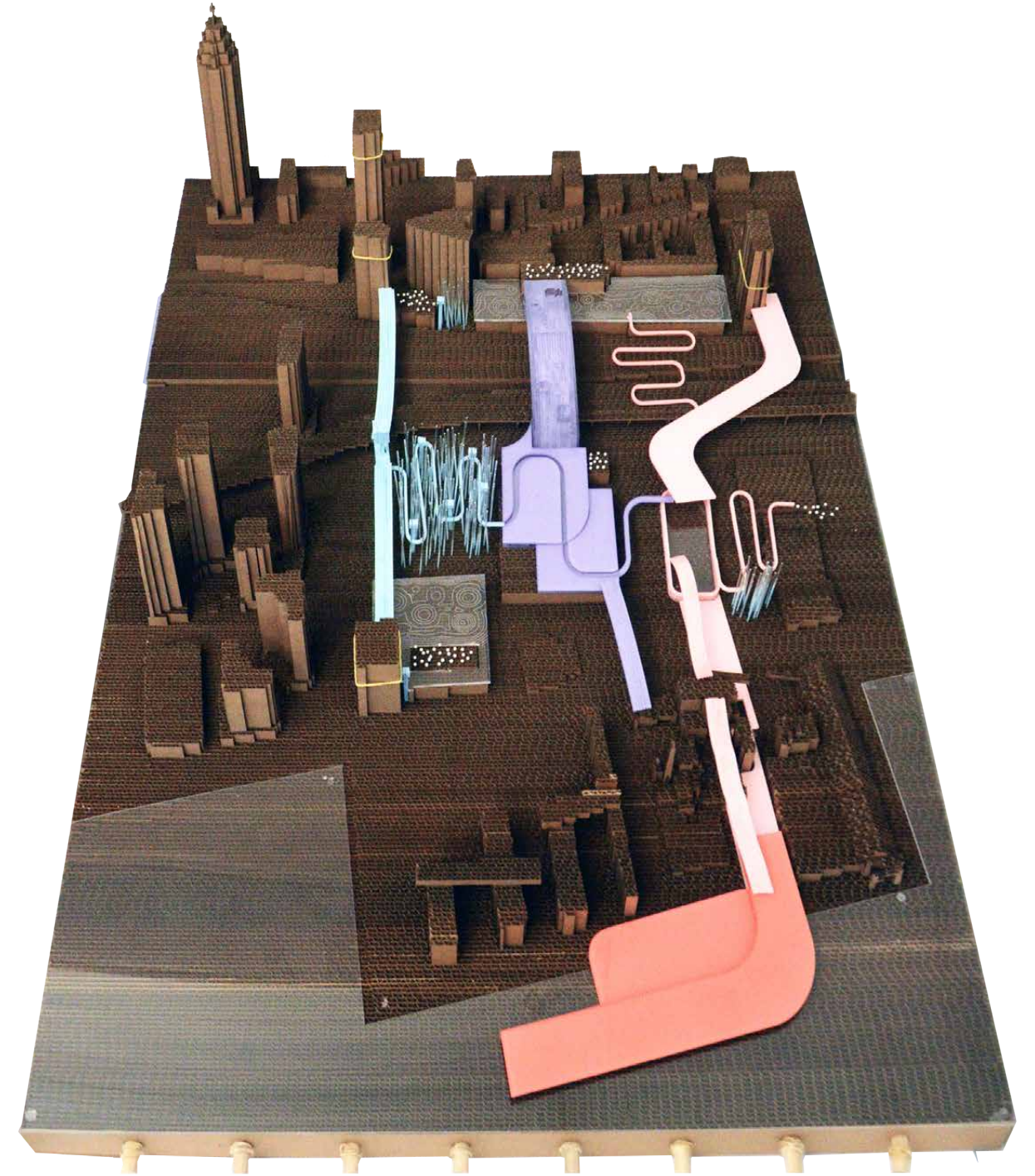
In the summer, taking a ferry across to the Toronto Islands is a popular past-time. Given the ferry's limited schedule, the introduction of water taxis would help fill that need

1" = 80'-0"



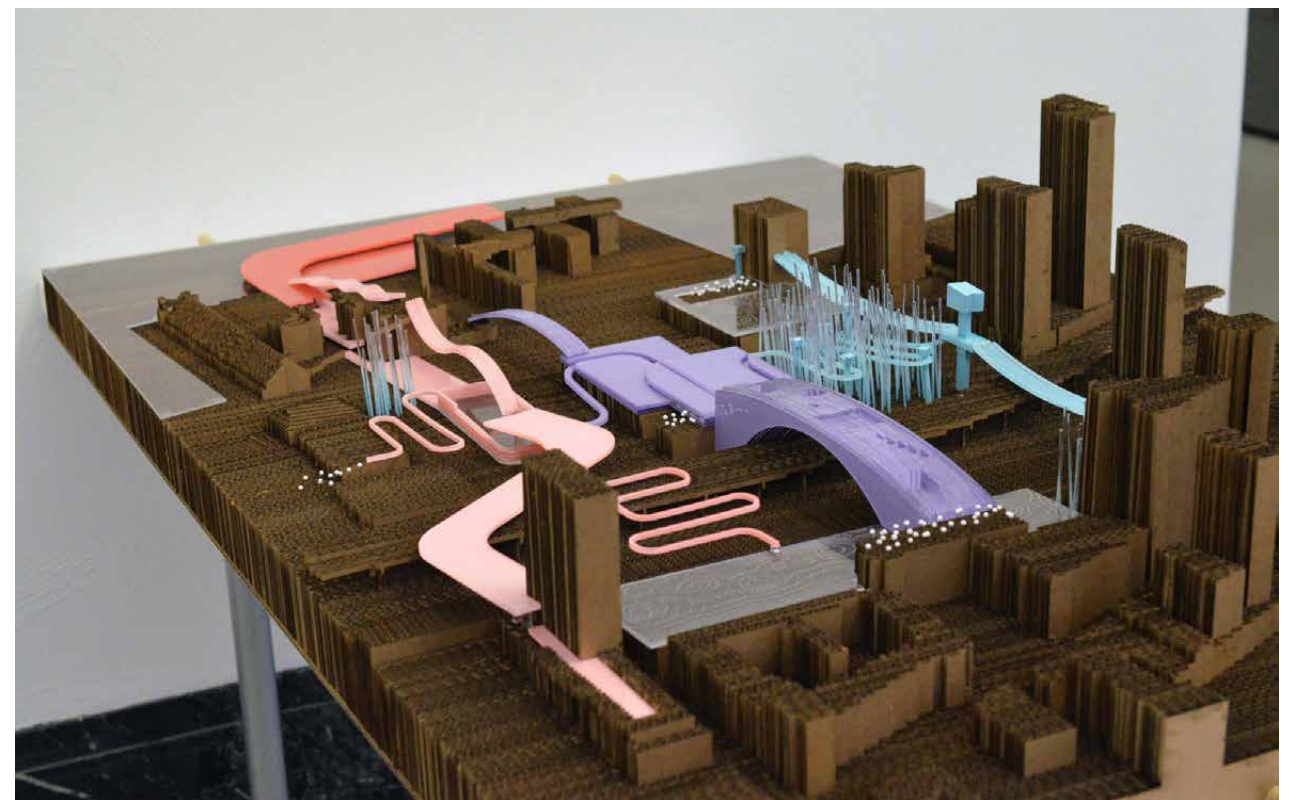
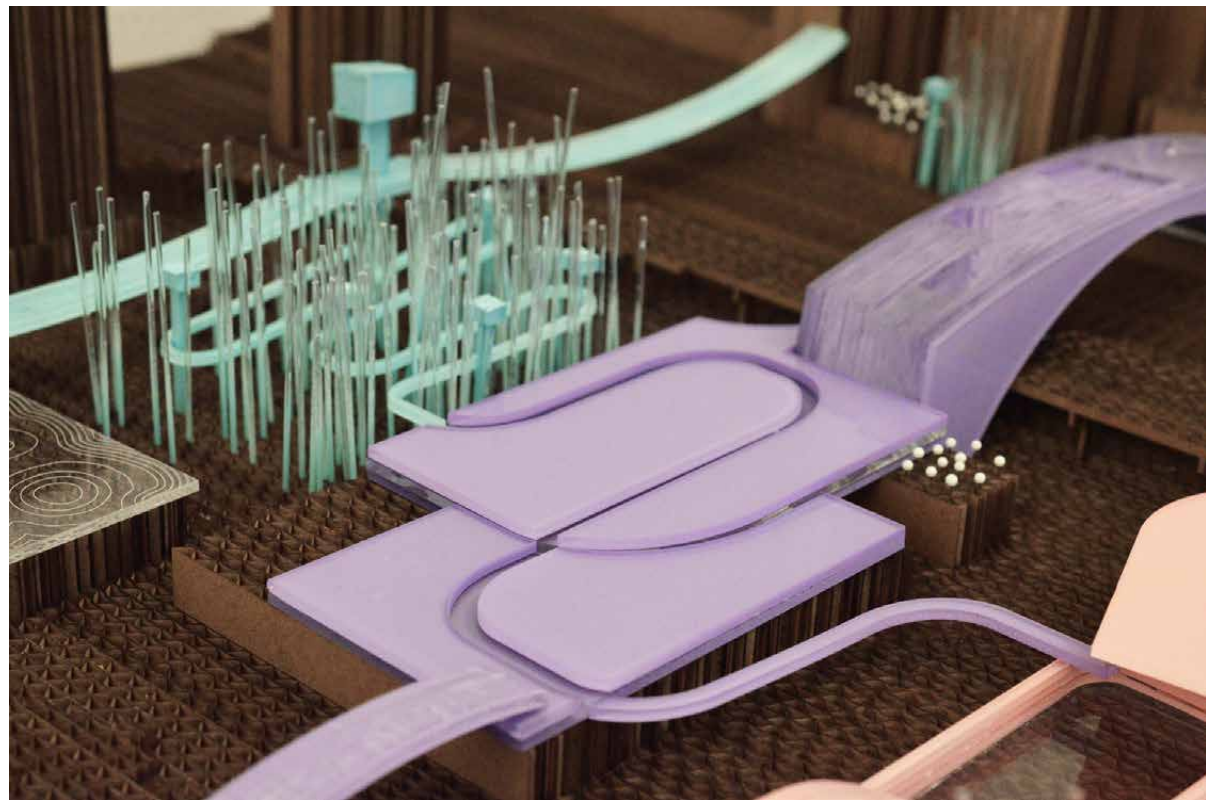
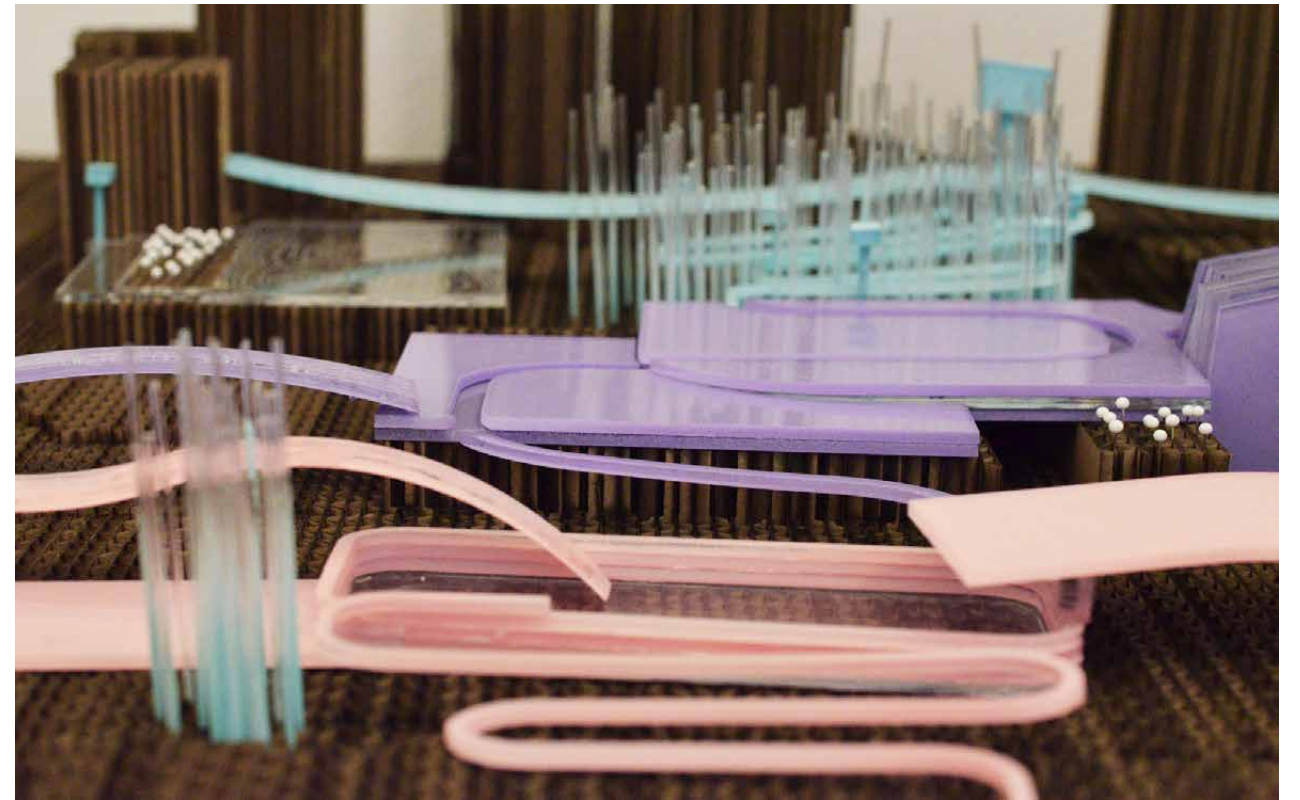


*Toronto Before*

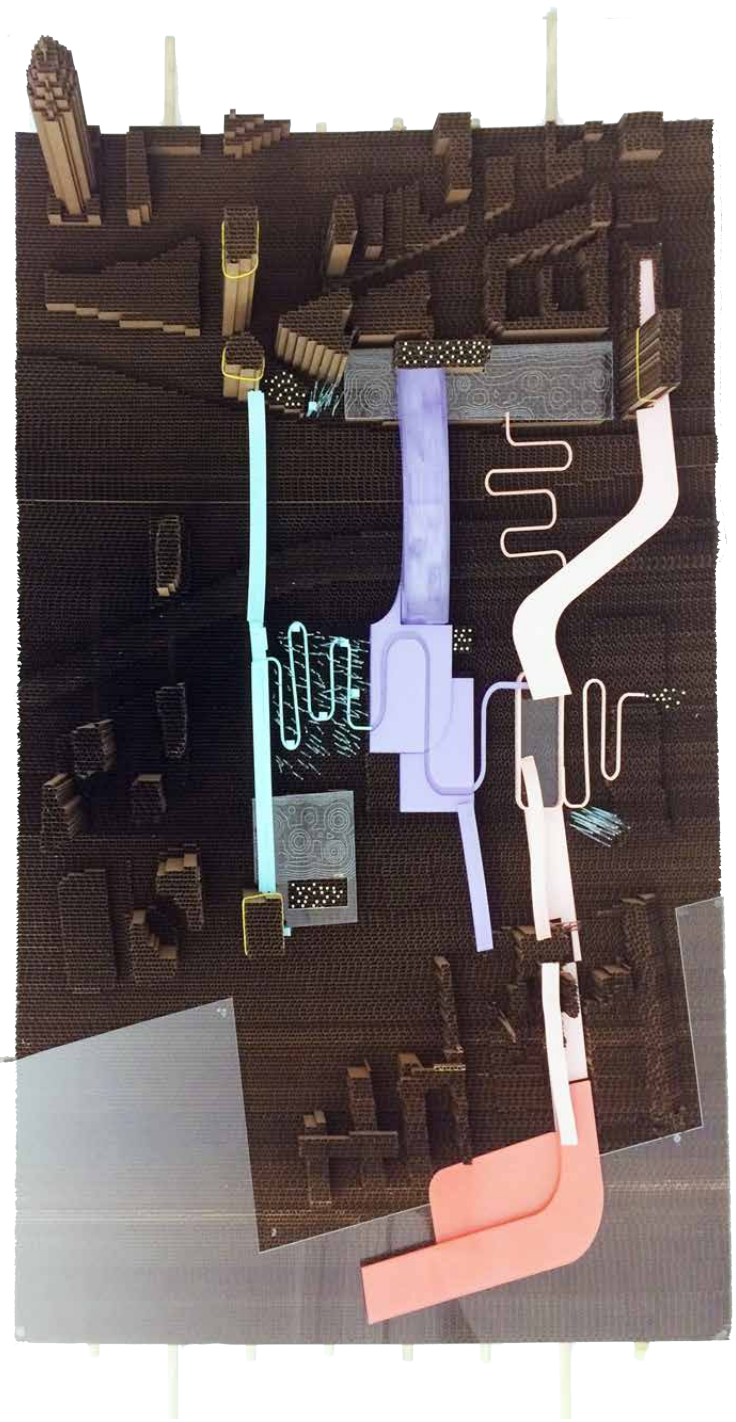
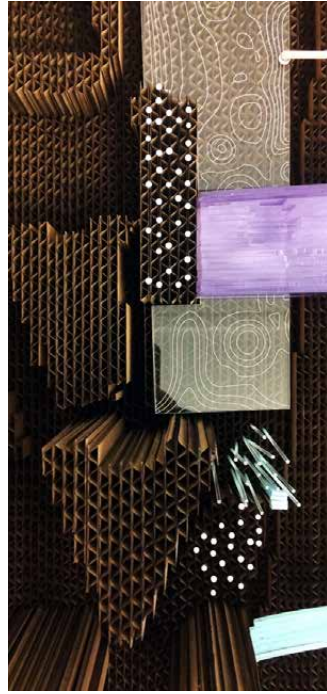


*Toronto After*













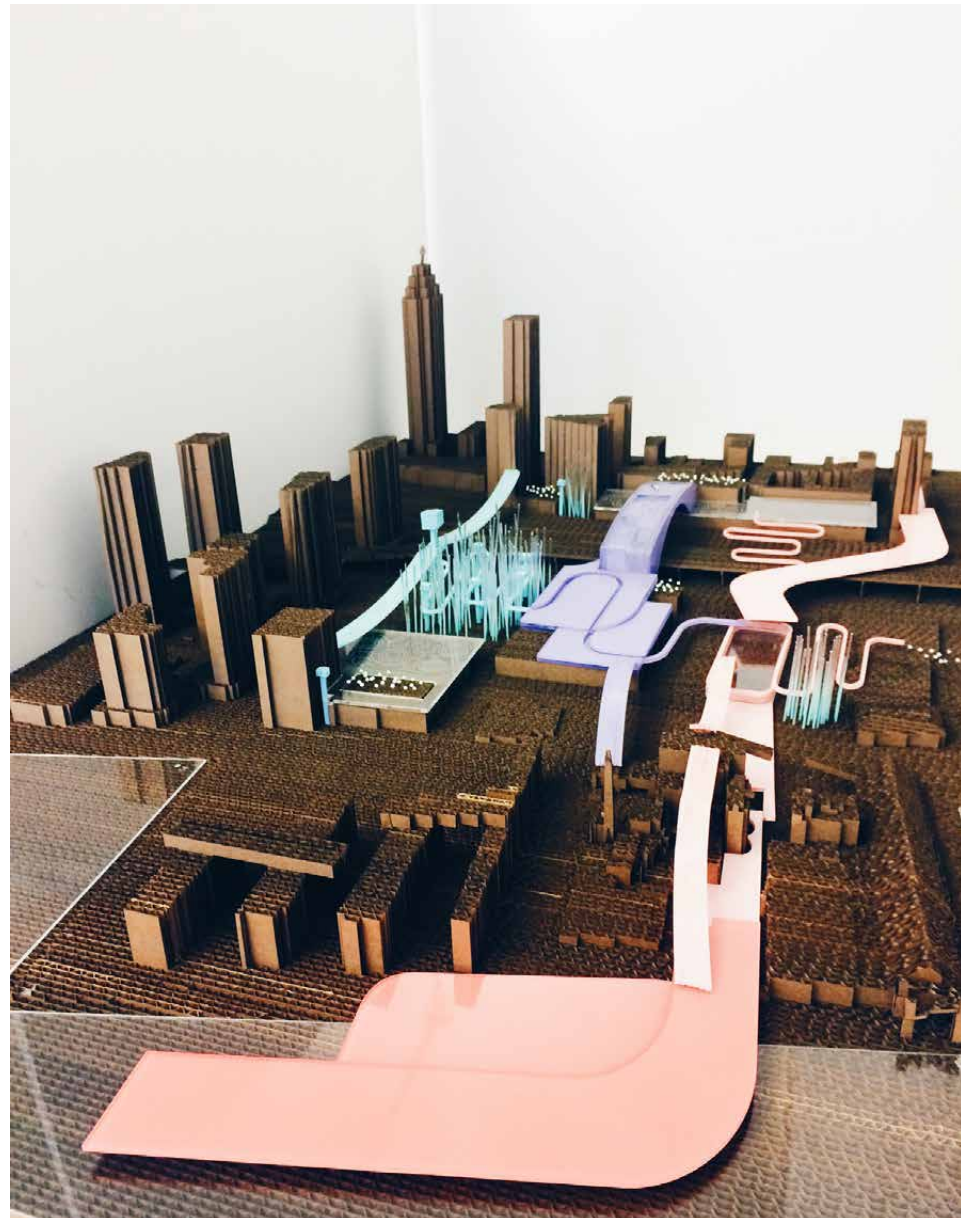




*Shelf Life Exhibition:  
Toronto Before*



*Shelf Life Exhibition:  
Toronto After*



## WHAT'S NEXT?

The word “typology” indicates a universality, a means of categorizing more than one specific instance. Though I have used it frequently throughout my thesis, it has always been within a very site specific context, that of Toronto’s waterfront.

What if these hybrid connections could be systemized into something universally deployable, no matter the waterfront, and no matter the city? How do they begin to feed into one another and work together, instead of just in their own specific swaths of the site?

Could it be deployed elsewhere on the waterfront?

Could it be deployed elsewhere in the city and not just the waterfront?

Could it be deployed in other cities?



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