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**AN ARCHITECTURAL INTERVENTION TO RESTORE THE CONTINUITY FROM
INFRASTRUCTURAL RESIDUE IN THE DENSELY BUILT HONG KONG**

SHIN-YI SHINY LAM
2015

A Design Thesis Presented to Ryerson University

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an architectural intervention to restore the continuity
from infrastructural residue in the densely built Hong Kong

by

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B.Arch.Sci, Ryerson University, Toronto, 2011

A design thesis
Presented to Ryerson University

In partial fulfillment of the
Requirements for the degree of
Master of Architecture

Toronto, Ontario, Canada, 2015
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*As architectural intervention to restore continuity
infrastructural residue in the densely built Hong K*

Master of Architecture, 2016

Shin-Yi Shiny Lam
Master of Architecture, Ryerson University

ABSTRACT

Transport Infrastructure has played a significant part in reforming the built fabric of our cities. Highways were constructed to facilitate connectivity the urban fabric ever more. The linear cuts incised through the continuity of both the physical and social fabric of the city. Left behind are impermeable accidental spaces, voids that are inaccessible to the surrounding users. Like no man's land, the interstitial spaces is its own realm and separates itself from the rest of the system; neglecting its potential as an in-between state, bounded by the edges of communities, infrastructure and landscape.

Simultaneously, recognizing architecture as an instrument of organization and its capacity to impose order within an increasingly complex and problematic environments. This thesis attempts to address the residual space created from highway infrastructure by investigating the problematic relationship between infrastructure and the urban fabric. Using architecture as the agent to unfold its potential as a junction, it proposes a design process that focuses on the integration of all fields that defines the urban fabric. The thesis incorporates the utilization of leftover spaces as the site for architectural intervention to restore the continuity of the broken city fabric.

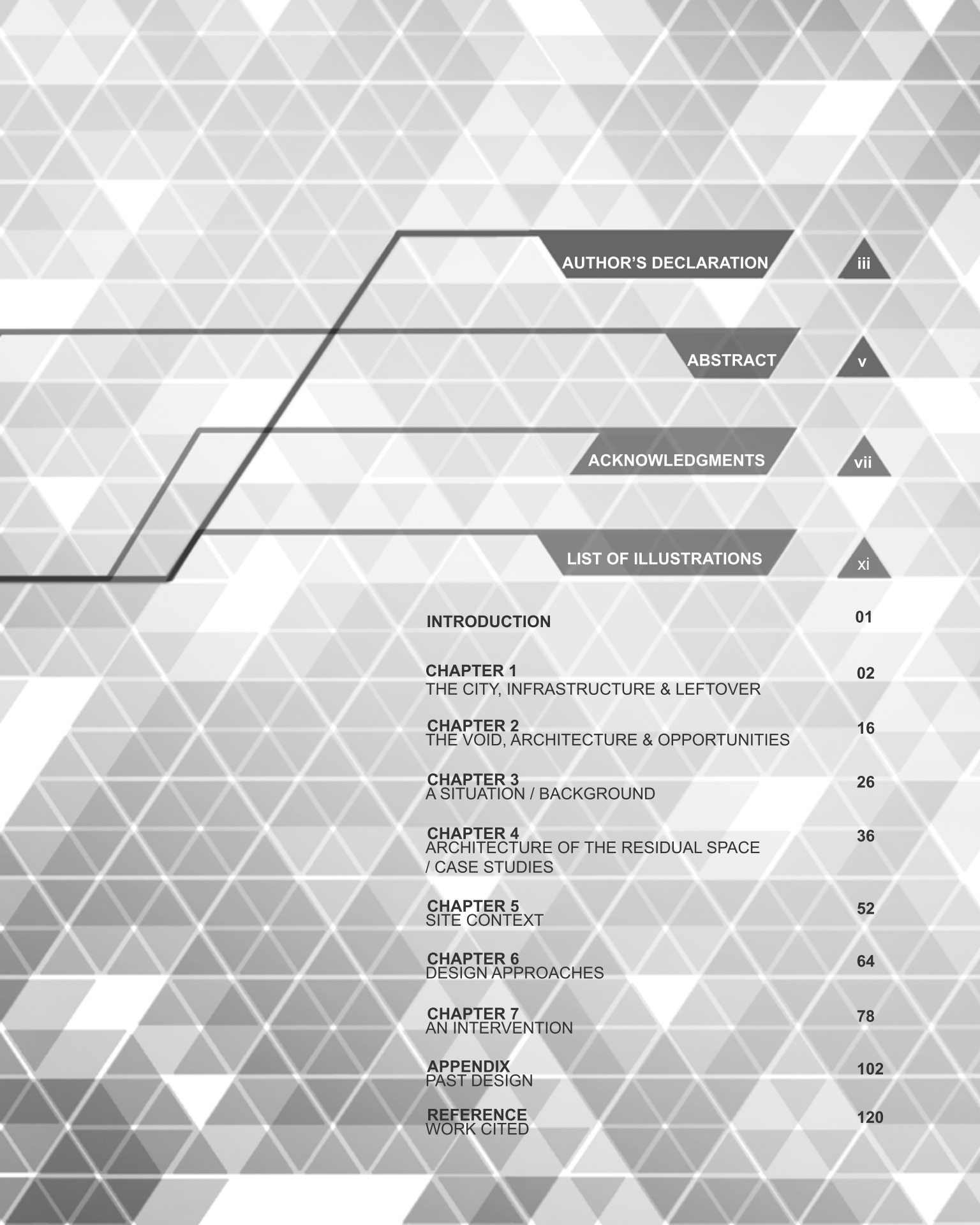
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INTRODUCTION

Traditional urban design formulas failed to incorporate the design criteria of transport infrastructure to the rest of the city. Noise, pollutant, absence of light, emission amongst many other factors makes the space around, underneath and over the transport infrastructure undeniably unattractive. Hence abandoned voids are often designated in our perception as no-go zones within the city. Infrastructure and the city can be harmonized through an architectural intervention proposed in the leftover space. The value of the interstitial space can then be revealed while restoring the continuity that once existed before intrusion of the highway. The underlying premise of this thesis is to exhibit the potentials of problematic sites such as the leftover spaces. They are hardly given any design consideration in the traditional process of city making. By imposing a new perspective on architecture, infrastructure, the city and its complicated relationship, the integration and marriage of all disciplines has the capability to create new ways to imagine the city.

Architecture can transform the fallow into the productive through attention to continuity; not the continuity of the planned and legitimated city but of the flows, the energies that are already present in the fabric. The city of Hong Kong was selected as a test site for this idea. Densely urbanized cities in particular can benefit from developing in the leftover voids from transport networks. The inherent weakness of lacking developable land to supply basic spatial requirements for the citizens of Hong Kong has been a problem for many years. The residual space surrounding the highways of Hong Kong can be an opportunity for the city to reverse the idea that land is a natural thing to waste. Developments does not necessary have to be established on green field site, providing an alternative for the densely urbanized city which is experiencing serious land shortage. At the same time, the rediscovery of leftover spaces allows restoration of the physical and social fragmentation of neighbourhoods due to the insensitive freeway developments.

CHAPTER ONE

THE CITY, INFRASTRUCTURE & LEFTOVERS

1.1 Introduction

The proliferation of high-speed and high capacity transport infrastructure in our cities has facilitated the growth in our urban environment. Seemingly a positive development as it provides connection across wider distances, integrating communities and neighbourhoods into a network to become a larger whole. Yet at the same time, the implementation creates a vast quantity of left over spaces that are unable to be incorporated into the existing densely composed fabric at a local level. (Fig 1.01) Although remnants or residue of a continuously reshaped cityscape is normal for every dynamically evolving city, the linear cuts incised through the continuity of both the physical and social fabric of the metropolis. (Berger, 2006) Leaving behind impermeable accidental spaces, voids that are inaccessible, neglected and isolated from the surrounding context.

(Fig. 1.02) Traditional urban design formulas failed to incorporate the design criteria of transport infrastructure to the rest of the city. Noise, pollutant, absence of light, emission amongst many other factors makes the space around, underneath and over the transport infrastructure undeniably unattractive. Hence abandoned voids are often designated in our perception as no-go zones within the city. These spaces as internal to the city are external to everyday use. (Sola-Morales, 1995) The dead spaces are often seen as “uninhabitable”, “ugly, ordinary and out of the way” as describe by Phoebe Crisman in her essay in *Sites out of Mind*. Many others have also discussed and investigated on the problematic relationship between the residues void and its seclusion from the overall context. New terminologies such as *drosscape*, *lost spaces*, *terrain vague* or *space in-between* have emerged in efforts to describe the various characteristic and impacts of



Figure 1.01:
Leftover space disconnects
the pedestrian level



Figure 1.02:
Inaccessible residual
territories at the highway
interchange

Image edited by Author

these spaces have on the city. While the definition of each term might differ ever so slightly, the common element that these terms share is the limitless potential the site inherently possesses. Residual spaces are fields waiting to be activated and to be reintroduced to the wider context. It is the intent of this thesis project to understand and discover the possibilities the vacant spaces left in the margins of transport infrastructure could bring through an architectural solution. Architecture is uniquely capable of structuring the city in ways not available in other disciplines. (Allen, 1999)

Understanding the competence of architecture as an instrument of organization is crucial. (Sola-Morales, 1995) This is especially evident in a complex and intertwined environment like the leftover spaces along the peripheries of the highways which has failed to connect with its immediate surroundings.

Addressing the void requires an interdisciplinary collaboration between the city, infrastructure and architecture. As an integrated project, the various disciplines together can reduce marginalization and segregation and stimulate new forms of interaction. (Shannon, 2010) The restoration of the continuity in the broken city fabric requires designers to view the leftover spaces as a site of urban activity vigilant to the forces and energy that surrounds it. Architecture can transform the fallow into the productive through attention to continuity; not the continuity of the planned and legitimated city but of the flows, the energies that are already present in the fabric. (Sola-Morales, 1995) Opportunities are created when architecture interacts with the complexity of its wider environment. The use of residual spaces within the urban context can provide reasonable and immediate opportunities for linkage and restoration of the community. Leftover spaces are often publicly

owned and of low value as they have little prospect for commercial or private residential development. Not only does residual space provides tremendous potential but it also exhibits various perceivable benefits. The rediscovery of leftover spaces allows restoration of the physical fragmentation of neighbourhoods due to insensitive freeway developments. In addition it reverses the idea that land is a natural thing to waste. Developments does not necessary have to be established on green field site, providing an alternative for densely urbanized city which are experiencing land shortage. Likewise, residual space can make a contribution to address public needs in the surrounding context since it has merely any interest from the private sectors. By reincorporating the residual space creatively into the urban fabric, it can challenge how people perceive “wastes” and its potential understanding and recognition of our wasteful nature. Proposing an architectural intervention could repair the physically and mentally broken city fabric; rediscovering the value and potential of wasted landscape. However this rationale is more or less an afterthought, or “band-aid” solution to a greater design problem. Could it be the lack of integration during the design process that has led us to believe that waste deposits are inevitable results of urban growth? Could a new approach to designing our cities focused upon integration eliminate the creation of seemingly problematic residues space?

Regardless if designers should plan ahead to avoid waste in the early design process for future

development, a vast amount of residual space have are already been created and left behind by our carelessness. The residues are waiting for a creative solution to be re-absorbed into the system of flows and complex relations set up by our urban environment. Constructing on neglected urban spaces such as median strips, traffic islands, underpasses, highway interchanges or other odd geometrically shaped spaces leftover from the intrusion of a high-speed motorway is not a hypothetical phenomenon. There are plentiful precedents that had seized the opportunities these sites have to offer. These projects have demonstrated that generalized infrastructural design principles can be applied in specific situations to generate meaningful results that benefit the wider community. (Figure 1.03, Figure 1.04, Figure 1.05, Figure 1.06) Infrastructure and the city can be harmonized through the architectural intervention brought forth on the leftover space. The value of the interstitial space can then be revealed while reinstate the continuity that once existed. The underlying premise of this thesis is to exhibit the potentials of problematic sites such as the leftover spaces. They are hardly given any design consideration in the traditional process of city making By imposing a new perspective on architecture, infrastructure, the city and its complicated relationship, the integration and marriage of all disciplines has the capability to create new ways to imagine the city.

Densely urbanized cities in particular can benefit from developing on the leftover spaces from transport networks. Instead of regarding residual space as



Viaduct Arches, Zurich



Farmer's Market, Sacramento



Informal Commercial Activities

Figure 1.03
Commercial activities under
the highway infrastructure



Folly for Flyover, London



Bunker Gallery, Paris



Chicano Park, San Diego



Flyover Show, Birmingham

Figure 1.04:
Examples of recreational
activities that can take place
in the leftover space



world wild fund office, Hong Kong



HKFW Service Centre, Hong Kong



Informal Classroom, New Delhi



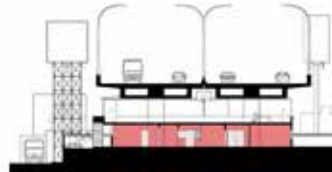
Figure 1.05:
Due to the low capital value
of leftover space, NGO offices
and other community services
benefit from development in
the residual territory



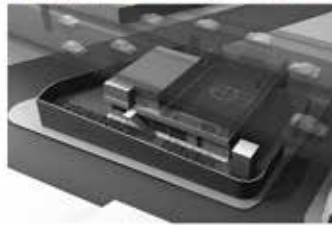
Le Corbusier Obus Plan for Algiers



Immeuble Burdeau, Algiers



Street Children's Shelter, Venezuela



Informal dwellings



Figure 1.06:
Residential type development
are also possible in the leftover
territory

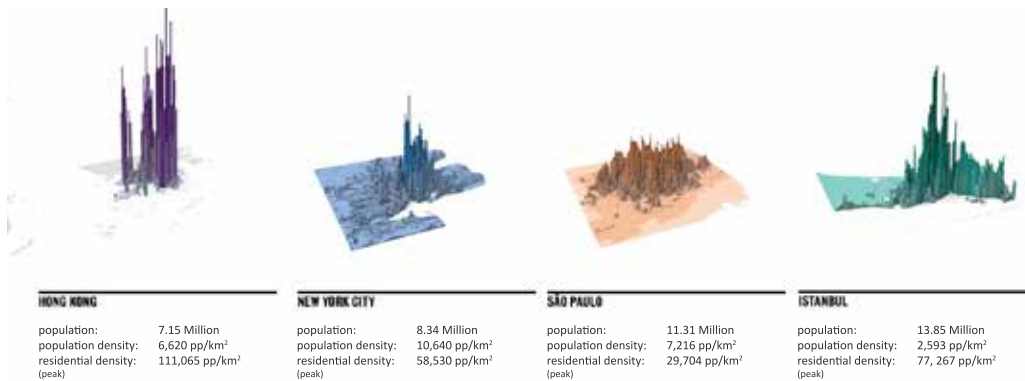


Figure 1.07:
Cities around the world
with a high population
density.

an alternative solution for development that caters to the crowded population. (Figure 1.07)

Cities like Hong Kong are one of the many victims that have been suffering from land shortage. Landfill and reclamation has been a method widely used to enhance land supply. Yet this strategy has failed to produce sufficient amount of land as the population continue to rise. Shortage of space is especially problematic for public housing and community facilities that are not fueled by large corporate investors. Spaces for small business are also being replaced by large corporations rapidly. Wet markets are being shut down one by one as retail chained supermarkets dominate the city. The tension have only been increased as Hong Kong finds itself as the world's most costly city for rents and one of the regions with the largest gap between the rich and the poor. More than 280,000 families are currently

living in inadequate housing such as caged homes and subdivided flats. (Suen, 2012) (Figure 1.08) Small business owners are forced out of their shops to sell their goods and services in stalls of the street. (Figure 1.09) Could residual space be an alternative to relief the land supply deficiency in Hong Kong as we recognized the potential, reimagine the possibilities and realize the opportunities that exhibits in these types of spaces?



EAT



LIVE



SLEEP

Figure 1.08:
Inadequate living spaces;
an individual living in a
caged home eat live and
sleep in the same space



closed store front



kiosks in front of empty store fronts



vehicular street not pedestrian street

Figure 1.09:
Small business are forced
to take place on vehicular
thoroughfare

1.2 At the Intersection of Absolute Absence

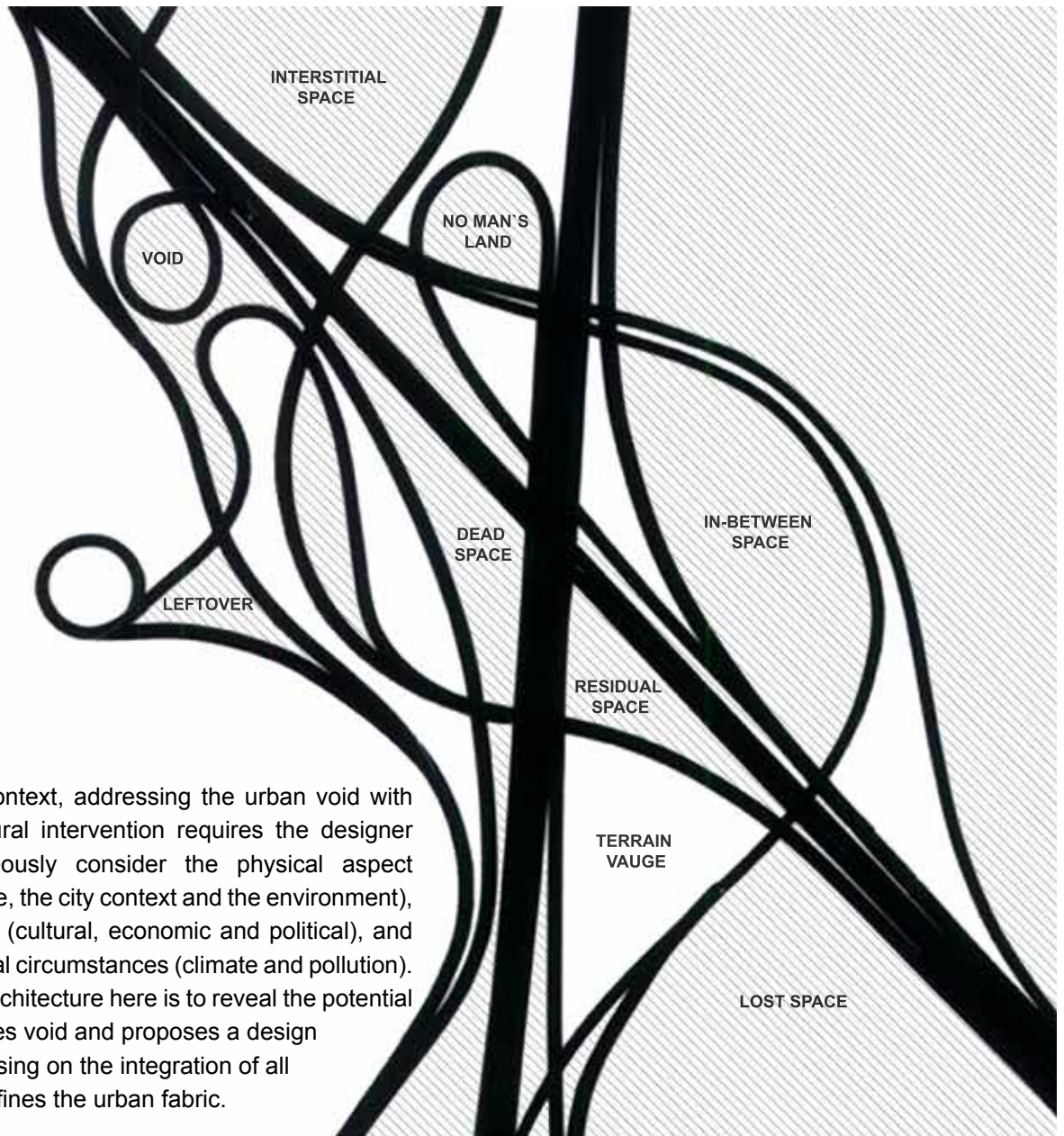
“The void points to the absence of intentions. The void is the absence of architecture. The void is the domain of the unfulfilled promise and unlimited opportunities.”

Colonizing the Void, Hans van Dijk

Urbanism, Infrastructure and Architecture in general research and practice belongs to different realms. The independence between each discipline during the design process of the city has accidentally left voids across the urban fabric. The space as a form of residue is empty, abandoned and inaccessible from the rest of the metropolis. By definition, *residual* means leftover, a remainder or the part that is remaining after a portion is taken. These spaces are commonly conceived as useless or regarded as *waste*, depicting themselves almost as natural as debris produced by the living organism. (Lerup, 2000) Hence Lars Lerup addresses this type of space with the term *dross*, meaning waste product, worthless stuff. He promotes us to rethink about waste, and how we can reincorporate wasted space into the metropolis by changing our points of view. However his philosophy suggests that we first recognize the residual space as a negative entity. On the contrary I believe that the residual space should be recognized and represented by its potential rather by its emergence. The term *void* would be more appropriate to describe the inherent qualities associated with this type of space. The dictionary

definition for the term *void* is completely empty. This term exactly describes my perspective on one of the most important traits found in these types of site. The term *void* suggests that the residual space possess the quality of absolute absence. At its current state the leftover space at the margins of transport infrastructure is an absence of identity, absence of intention, absence of dynamic and the absence of limits. The ambiguous quality the void has invites a creative solution to bring forth its potentials and through such intervention, the void can be reintroduced into the larger urban network.

The intention is not to simply fill in the void to close in the gap, but to make the void full of meaning by assigning a practical function that is relatable to its surrounding context. Therefore dealing with residual spaces in an urban context involves with their perimeters. The intervention requires penetration of both the visible and invisible boundaries to make the site accessible by the people. The fundamental premise for any public space to work is the human condition. As manifested in the writings of Jan Gehl in *Life between Buildings*, people in general have the desire to interact with others. Designers must take into consideration the relationship between people and its interaction with the environment. Designing the void with the primary focus on access, use and the relationship between the person and the built environment, rather than directing our priorities to impose limits, order and form across the site. (Figure 1.10)



Given this context, addressing the urban void with an architectural intervention requires the designer to simultaneously consider the physical aspect (infrastructure, the city context and the environment), social issues (cultural, economic and political), and environmental circumstances (climate and pollution). The role of architecture here is to reveal the potential of the residues void and proposes a design process focusing on the integration of all fields that defines the urban fabric.

Figure 1.10: Designers and writers try to define this type of space by their own terms and definitions.

The thesis proposes an architectural intervention in the residual void to restore the continuity of the fragmented urban fabric in multiple dimensions. Not only should we restore the physical continuity, but more importantly it should be regarded as an opportunity to restore the fragments of society. The void can also be interpreted as an interstitial space, a junction that requires incorporation from all disciplines. The residual are left physically in between infrastructure and the city, and in between the *semantic* sources which nowadays build up the image of our cities. (Rico, 2011) The *interstitial spaces* found between, under and over large scale transport infrastructural work are intermediate interstices. The void possesses unlimited potentials, but its potentials cannot be realized until the space is recognized as the interaction of all of the forces. This is because it is extremely difficult and complex to manage all the energies and elements that surround this space in a coherent way without the introduction of a creative architectural intervention that have turned it into a void of absence. Moreover the size and irregularity of the discontinuous spaces makes it practically impossible for conventional urban planning typologies which require large consistent building footprints to occur. Infrastructural interstices are often small and irregular in their physical appearance. These spaces are generally created to be as small as possible to minimize the land required for the construction of the expressway. The appearance of abandonment of these spaces may discourage any usage accepted by formal authorities. Hence the reluctant spaces

around the infrastructural form frequently attract informal activities. Some of these activities may include homelessness and street art which are generally not encouraged by the authorities and frequently described as activities outside the formal norm. Informality allows opportunities for unofficial trade, networks, recreation and dwellings to establish themselves in the interstices of the private and public realm. (Wall, 2011) The residual void had been able to provide for those who are marginalized by society and unable to relate themselves in the more restricted and formal parts of the city.

The initial thoughts gathered from a brief exploration on the conditions of this type of space demonstrate several qualities that will direct the design of the thesis project. First, acknowledging that the residual space as a void exhibits unlimited potentials and possibilities. At the same time, the residual territory is also an interstitial space found in the junction of society and urbanism. The physical conditions permit the site to perceive as a marginal space in the urban network, drawing informal activities by users unable to relate to the formality and the expectations of society. The space should be more accurately defined as inaccessible and abandoned in the formal logic. The lack of identity of the site prevents itself to be conceived as a *place* rather than an ambiguous space. In essence, the residual space failed to be part of the greater system because it is unable to relate itself with the rest in a coherent way. The project explores the juxtaposition of several contrasting conditions, primarily the relationship

between the formal and the informal or in other words, the authoritative planning verse collective aspirations. Instead of perceiving the two as conflicting opposite, the thesis encourage to find a harmonious dialogue between the two through a project to create a new continuity. The unsettled tension between the filled and the void, the integrated verses the isolated, the fluid and the static, reveals the common element that these conditions share is the need for interaction. Therefore to re-establish continuity between the residual spaces in the neighbourhood fabric is to encourage interaction with the surrounding needs of the community. The proposed intervention should address interactions of various kinds amongst many others such as the social, economic and environmental exchanges. At the same time, think about role of architecture and how it is capable to contribute positively in this context. In no doubt, leftover spaces are problematic, they call for interaction, not interaction in the formal system but seeking alternative aspiration from the collective. Ultimately, the dynamic between seemingly opposing forces reveals a potential for new urban process. Informality emerging from the bottom-up innovations provides an opportunity for those excluded from formal process to find presence in the city. The marginal spaces could be seized to make positive contributions to empower the marginalized groups in society. In reciprocal, addressing those desires in the residual space allows a new perspective and creates a new continuous dialogue between the environment, the people, and the city.

CHAPTER TWO

THE VOID, ARCHITECTURE & OPPORTUNITIES

2.1 Descriptions of the Residual Space

At the end of the last century, an explosion of new terminologies has emerged in order to describe the phenomenon of the remainders that dissipates across the city at the peripheries of transport infrastructural development. This space was not given a proper name or address. It may be referred as the space underneath the elevated highway, or the parcel of land surrounded by the highway ramp. It is a space without an appropriate identity. Essentially, the leftover spaces found between, beneath and over infrastructural form are small, irregular and enclosed. They are made as small as possible to minimize area on the ground place needed to construct the infrastructure. They are irregular because the spaces are the remainders or the “negative” space of the solid form. The geometry is defined by the infrastructure it surrounds. They are

enclosed in such a way that they disconnect themselves from the rest of the system. Power, water or communication networks often do not overlap across the residual spaces. With no connections with the surrounding context, the edges of the leftover spaces are bounded by invisible borders that blocks pedestrian access. This results an isolated island, a void, a hole in the continuous landscape of the city. (Figure 2.01)

2.2 The Ambiguous Void

The ambiguity that exists in these types of spaces attracts designers of the city to try and assign a definition to them and examine its qualities in their individual perspective. The writings investigate on the quality and characteristics of residual spaces including the remainders from highway development but not limited to other forms of vacant leftovers

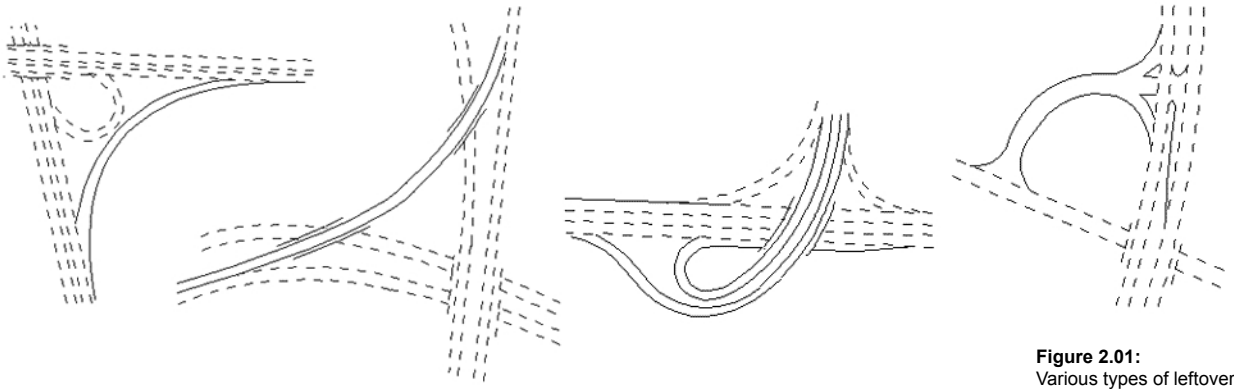


Figure 2.01:
Various types of leftover
space are created by
transport infrastructure

within the city. The description of these sites varies from *ugly*, *inhabitable* to *waste*, and from *vacant*, *free* to *available*. One common element exerted from almost all of the writings is that these sites are embedded with a vast amount of potentials behind the seemingly problematic conditions. The potentials can only be activated through a creative solution outside from the conventional strategies. Instead of addressing the problem from top down, a bottom up approach should be considered with an emphasis on design integration between all disciplines of practice. Putting the interest of the users first rather than the interest of the authorities. Defining the residual space takes a very similar process to define architecture. The subject was compared to architecture in light to drawing connections and to understand the role architecture in residual spaces. The abandoned territories are spaces forgotten in the urban design equation and architecture about the treatment of space and how both positive and negative spaces relate to one another.

"My architecture is not conceived in plans, but in spaces (cubes). I do not design floor plans, facades, sections. I design spaces. For me, there is no ground floor, first floor etc... For me, there are only contiguous, continual spaces, rooms, anterooms, terraces etc. Stories merge and spaces relate to each other."

Shorthand record of a conversation in Plzeň, Adolf Loos, 1930

2.2.1 Inhabitable Waste

Extensive highway construction across the city has left residues that are "ugly, ordinary and out of the way" as Phoebe Crisman describes in her essay *Site out of Mind*. These spaces are "inhabitable, problematic discontinuity" in the physical and social fabric and are hardly given any design attention. The writer purposely depicts a very negative image of the left over space since that is the general perception the collective whole has agreed upon subconsciously. Similarly, Lars Lerup describes these sites with the term *dross*. The dictionary defines *dross* as wastes, and worthless stuff that possess no value. The term *dross* contributes to his understanding of the qualities present in residual spaces generated by large-scale infrastructure within the city. In his article *Stim & Dross: Rethinking the Metropolis* he defines *dross* as "waste product formed on the surface of molten metal during smelting" essentially, it is "worthless stuff as opposed to valuables or value". *Stim*, on the other hand is opposite of *dross*, it is the stimulators in our society. (Lerup, 2000) Lerup begins by placing a strong emphasis on the interstitial character of the *drosscape*. That *dross* is waiting on the critical consideration to be re-introduced into the system of flows and complex relations. He understood *dross* as a natural occurrence of the growing cityscape. The emergence of *dross* is so natural that the concept is comparable to *debris* produced by a living *organism*. He acknowledges that *dross* is the undervalued, the leftover of the "unfortunate economic residues of the metropolitan machine". Simultaneously, he

acknowledges these spaces form a network of interstices distributed across the urban system as a field waiting to be activated (he depicts this as the 'holey plane'. Cultivating the potentials that dross possesses requires designers to rethink "only in the hybrid field of stimdross". If stim are the deliberate, developed urban areas and dross is urban dereliction. Stimdross is a combination of the two which calls for a new perspective to generate a whimsical chemistry through a dialogue between them. Phoebe Crisman in her article also elaborates on this point and identifies that we are aware of the existences of these spaces but never really consider or evaluate the value of these sites. Whether it is the physical limitations or the fact that it is rejected by society due to its apparent negativity, these sites comprises potential of re-inhabitation through conceptualization that differs from the mainstream. The uncommon nature of these sites requires innovation to combine formal programmatic typologies and the atypical qualities of these spaces. (Crisman, 2009) The author recognizes that this space belongs to the public realm as she questions the possibility of construction on a site that exists literally in the margins of high-speed infrastructure. Through investigation and review of several projects in her paper, Crisman firmly believes that design can positively influence complex conditions that made residual space exterior to the rest of the system in the first place. Both Crisman and Lerup realize in their writing is that potentials are present in what may seems to be waste and worthless. The residues typically considered as an eyesore have the

potentials to be icons through innovation.

2.2.2 Drosscape

Extending on the theories of Lars Lerup, Alan Berger, an urban planning professor at MIT investigates on the characteristics of residual landscape in his book *Drosscape – Wasting Land in Urban America*. Berger defines the urban residues (not specifically left by highway infrastructure as this thesis is focused on) as drosscape. Dross or waste can be repurposed and reprogrammed by designers to generate meaningful results. He argues that the use of the term dross differs from Lars Lerup's definition even though it may share the same roots. He commences his writing in recognition that dross is inevitable "waste" in city development and a natural component of every dynamically evolving city. As such it is an indicator of healthy urban growth. (Berger, 2006) In his writing, the author points out that such "waste" is the by-product or consequence of rapid urban sprawl. Waste also emerges as the remainders of previous economic and industrial process. Derelict buildings, contaminated sites, vacant lots and infrastructural spaces are all considered as drosscape, or in other words "waste landscape". These types of landscape are not necessarily problematic but require new conceptualization, encouraging design innovation and the creation of more flexible and adaptable design solutions. He concludes in his final chapter that "the future of any given drosscape, or any entity that is undervalued, lies profoundly in the interaction

of human agency". (Berger, 2006) Designers spanning multiple fields of practice are required to rethink about their roles and their approaches in the urban world in context to this new paradigm. A new design process focused upon integration is required in treating residual spaces within the urban fabric as sites of urban activity, form and function. Lastly, in his manifesto, he challenge "designers to consider working in the margins rather than in the center". Berger acknowledges that to successfully address the residues, one need to work from the bottom up. The emergence of residual spaces is more or less a miscommunicate dialogue between different expertise. The leftover space within the urban fabric is the result of this inwardly focused design process neglecting and inconsiderate to all the elements present in the situation.

2.2.3 Lost Terrain

Public interaction and activities are some of the essential components to the abstract urban fabric. This is also the vary quality that the residual space have lost during the process of urban growth. Imposing a private develop on these sites will not address the broken continuity of the greater fabric because it is another barrier to public access. The spaces surrounding large scale infrastructural work "have lost the values and meaning that were traditionally associated with them". (Trancik, 1986) Roger Trancik tries to define spaces that lack

definition and have lost its identity in his book *Finding Lost Spaces*.

"Generally speaking, lost spaces are the undesirable urban areas that are in need of redesign – anti spaces, making no positive contribution to the surrounding or users. They are ill-defined, without measureable boundaries, and fail to connect elements in a coherent way"

Residual spaces, or in Trancik's words, lost spaces have misplaced its value and identity because it was unable to relate to its surroundings. The word lost as the dictionary defines as unable to find one's way. For this reason, leftover spaces at the margins of the modern expressway are required to realign itself with the surrounding flows and forces that are inherent in the complex urban environment. To assist the lost space to re-establish its identity calls for opportunities to create new sites to host urban activity. Until then, the residual space remains ambiguous.

Spanish architect and critic Ingasi Sola-Morales marks the ambiguity of the space with the French expression *terrain vague*. Sola-Morales also understood that we often classify the residues as an eyesore within the urban context. "These areas are simply un-inhabited, un-safe, and un-productive. In short they are foreign to the urban system, mentally exterior in the physical interior of the city, it's a negative image." (Sola-Morales, 1995) Perhaps we feel insecure as inhabitants of the city when a space is not occupied by architecture. However simply

because these spaces are underutilized does not mean it could not be. The writer takes a very positive view of the undefined spaces of infrastructure. Sola-Morales chose to capture his understanding for these types of spaces with a French term because it is impossible to capture the multiple layers of meaning in a single English word or phrase. The concept of *terrain* in French is more expansive as opposed to the English definition of land since it connotes a quality with more direct relations to the urban environment. He then explored the etymology of the word *vague* which has both Latin and Germanic origins. In short, Sola-Morales was able to derive the qualities from his exploration as “empty, unoccupied” and “free, available, unengaged”. (Sola-Morales, 1995) These spaces are indefinite and further described as a form of absence. Not only is it indefinite in its physical appearance but more importantly “these spaces as internal to the city yet external to its everyday use”. The key understanding of *terrain vague* is has both spatial and social connections. Although the void is absent by conventional public adaptation but the “absence of limits” is also the promise of unlimited possibility. The duality of absence is the most fascinating concept of the *terrain vague*. The absence is what makes it seemingly negative, but at the same time it is also its most positive quality. However, adapting this concept in practice may be difficult for architects and designers. According to Sola-Morales, “architecture’s destiny has always been colonization, imposing limits, order and form”. He criticizes that the nature and the problems with architects is the fact we like to simply fill in the void

because we have the ability to do so with a design form as a method to restore the physical continuity of its surroundings. When architects and designers exercise their desire onto an empty space, they often ignore “the flows, the energies, the rhythms” from the social context. The duality of absence could also be interpreted as interstitial. *Terrain vague* is at the intersection emergence of the positive and negative, the tangible and the intangible. Whilst the concept of *terrain vague* as depicted by Sola-Morales does not correspond with a clear design solution and how the idea can be implemented in reality, his idea was further expanded by Alberto Perez Gomez in his article *Spaces In Between*. Recognizing the residual spaces are “physically” left in between infrastructure, but simultaneously it lies in-between the “semantic” sources that compose the image of our city. Conventional thinking in architecture and urban planning orient their focus on the former – the physique of the urban form in oppose to the latter. The second quality is where the potentials truly exist. The physical availability may allow the introduction of a form into the space, but is not the quality that allows the space to become critically engaged with the rest of the urban context.

2.2.4 Theoretical Conceptions

The readings repeatedly suggest that there are lots of potentials with the residual spaces to be incorporated into the urban fabric. Although none of which is specifically addresses the residues of infrastructural space implicitly generated by the

highway, they all generalize the theories that concerns the entire category of leftovers in the city. Writers acknowledge that the leftover spaces appear to be problematic because we are approaching it with typical design strategies. The irregularity of these types of spaces calls for innovation and design integration. Economy, ecology, culture, politics and networks are separate topics in the conventional understand but these factors should be consider holistically as they all make an influence to the subject. (Stoll, 2010) Therefore, the role of architecture requires re-interpretation. As criticized by Sola-Morales that architecture is forever on the side of forms, imposing limits and order leads me to the question how can architecture respond to the residues space to establish continuity of both the physical and social realities? Is Sola-Morales right about architecture are only able to introduce violent transformation in our cities? Can architecture produce meaningful interventions that address both qualities?

2.3 The Uncertainties of Architecture

Prior to addressing the question in regards to the role of architecture in the residual spaces unintentionally created by large networks of transport infrastructure, a more fundamental concern needs to be answered – What is architecture? What qualities does it possess and how does it position itself amongst the other design disciplines in city transformations? Architecture is difficult to define precisely. Architects, designers and theorists are

constantly trying to define and redefine the meanings of architecture. There has been an explosion on borrowing concepts from other disciplines to advance our understanding. At the same time, the term architecture was also used and reinterpreted in other fields. In essence, architecture is far beyond just form, order and the aesthetics but it is a system of organizational complexity. Architecture has the capacity to operate as a dynamic infrastructure within an increasingly complex and intertwined environment. (White, 2011) This includes environments that are seemingly problematic situations such as the uncertain residual space. Architecture is able to configure spaces and including the undefined and abandoned interstitial leftovers in the margins of high-speed transport infrastructure.

2.3.1 What is Architecture?

“Architecture typically focused on the internal system of the architectural object has failed to acknowledge the systems of environment that envelop architecture.”

Formatting Contingency, Manson White

Manson White, the co-founder of InfraNet Lab writes in his article Formatting Contingency and later again in Disciplinary Thievery in efforts to explain his thoughts on architecture and its relationship with infrastructure. First, he acknowledges that architecture is not an object, but a system of alignment, of contingency. He demonstrated this

point by specifying the term “architecture” has been revisited by fields foreign to our discipline. Business (business architecture) and computation (information architecture) theory have both adopted the term “architecture” to address the complex economic conditions and expanded data fields respectively. White introduces the contingency theory defined by Paul Lawrence and Jay Lorsch in 1967 who were both professors of organizational behavior at Harvard Business School. White relates his understanding of contingency to the design discipline as “an anticipatory act, and is often devised as a response to an eventuality.” (White 2011) The role of contingency in architecture permits opportunities to emerge when architecture interacts with the complexity of its greater environment. In this sense, architecture is redefined from a static, hierarchical, inert, to a dynamic, adaptive, responsive organization. There is no prescribed methodology in architecture because it is charged with endless eventualities.

“Performing in a manner similar to infrastructure, [architecture] support energies, flows, resources” (White, 2011) Not only does it support, but the term “architecture” at its broadest sense should include all of the factors addressed in the expanded field. (Fig 2.02) The diagram below was created to explain the expanding disciplinary terrain of landscape, infrastructure and urbanism inseparable with the architecture. Architecture, as a system of managing all the forces that affects by the design opportunity including those traditionally categorized in extended disciplines, should ignore the limitations of crossing

boundaries into different expertise. In light of this, I have recreated a similar diagram to explain the relationship across the three generalizations. Architecture is capable of managing the outlying forces that surrounds the opportunity and a successful project will integrate all of the forces cohesively with an architectural intervention, as a combinatory exercise of all expanded fields will reach equilibrium. (Fig. 2.03) In other words, architecture exists at the ambiguous intersection in the midst of the various disciplines.

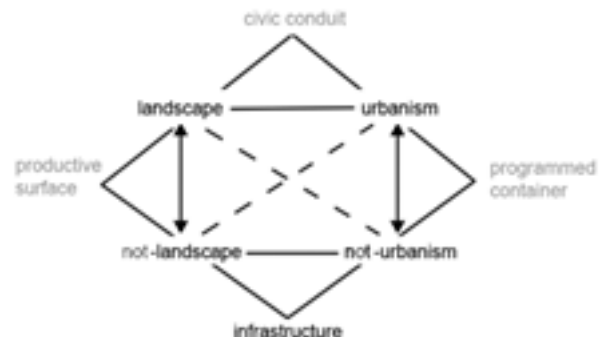


Fig. 2.02:
Infrastructure in the
expanded field, InfraNet
Lab, 2009

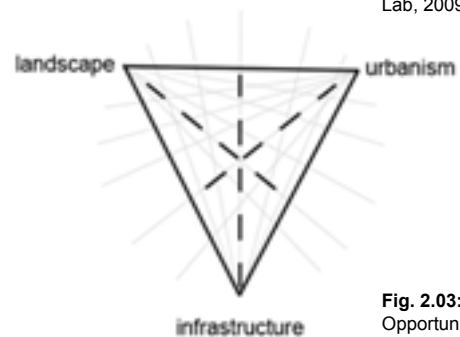


Fig. 2.03:
Opportunism in the
expanded field, Shin-Yi
Lam, 2013

White was able to redefine his perspective on architecture from concepts borrowed from other disciplines. However, the architectural discourse should not be dominated by a series of borrowing from other theories as Bill Hiller argues in his book *Space is the Machine*. Because theorists have been so focused in borrowing other ideas in efforts to explain architecture, very little emphasis was given to the “internal development of architecture as a discipline”. Not only does Hiller put his efforts to define architecture but more importantly he tries to understand the ways in which people and the physical environment are inescapably related. Through an inwardly focused exploration within the discipline, Hiller understood that architecture as ‘configurations’. “Configuration means put simply, relations taking into account other relations.” (Hiller, 2007) Ultimately, architecture demonstrates the co-presence of the physical and social elements, and to impose or configure any architectural imagination will require opportunities. As El Lissitzky once said “Space does not exist for the eye only. It is not a picture: one wants to live in it”. In essence, architecture is about the human energy. It exists for the people and the activities they execute.

2.4 In-between architecture and the void, a connection

Architecture and residual spaces actually shares several qualities other than its obvious ambiguity. First, both architecture and the residual space need prospects for realization. What governs the outcome of the project is dependent on the

opportunities available in the wider context. Although there are no prescribed techniques to deliver the endless possibilities in architecture or the residual spaces, but not all outcomes will provide a positive contribution to the greater environment. Architecture and the residual spaces require integration in multiple levels. It calls for the integration of all the elements that may affect the result of the project, and it encourages designers across all disciplines to be engaged in the design process. Architecture and the residual spaces left as a result of infrastructure development seeks a pragmatic and practical approach to address the physical problems and intangible qualities that dictates the scope of the project. The uncertainties present in architecture and residual territories, can almost be represented as an in-between state. Architecture and the leftover spaces are shaped by the forces that surround it externally, and at the same time want to integrate the flows internally. The emergence of leftover spaces could be interpreted as a state of imbalance tensions where some elements were neglected during the design process, therefore disconnected with the rest of the city fabric. To address the residual territories, with the intentions to restore the continuity of the broken urban fabric, requires the re-allocation of the physical and social influences from the exterior with the emphasis put towards the human element. (Fig 2.04)

The flows, energies and forces that are often described and discussed in most of the readings suggest the social condition, the human element,

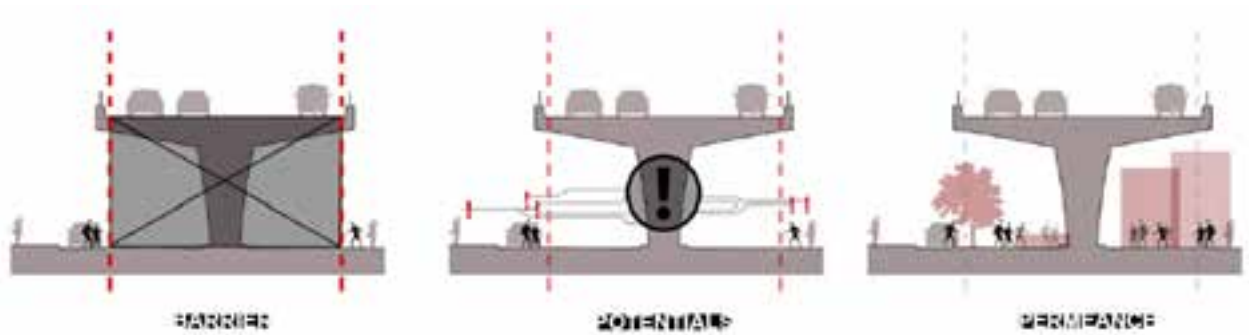


Fig. 2.04:

The residual voids, such as undefined space underneath the highway, responds to opportunities through organizing the energies, flows, resources and matter emergent from the public realm. Architecture can realize the potentials of the urban void by integrating the physical and social influences present in the wider context. Through this approach, the leftover space can restore continuity within the urban fabric.

Image by Author

the desire for interaction with people. Both architecture and public spaces are created with sensitivity to its inhabitants; creating spaces that respect people's physical, sensory, needs and social capabilities. (Gehl, 1987) The opportunities that architecture and the residual spaces need are human activities that can happen between and in-between buildings. Increasing, architects are more concerned about the user experience in their projects because we now understand that the true importance in design is about the people and their activities in imposing to the form and aesthetics. The absence of historical traditions, identify and spatial integration that seems to characterize the leftover spaces at the margins of the elevated highway are being seen as lost opportunities. (Harnack, 2011) The energy embedded in the infrastructure and the energy embedded on pedestrian level tends to be forgotten in the equation. The void on the ground

place truly belongs to the public and a people-focused adaptation should be considered when re-appropriation these sites.

CHAPTER THREE

A SITUATION / BACKGROUND

3.1 Finding Opportunities

Opportunities are created when architecture interacts with the complexity of its wider environment. Residual spaces are open fields of opportunities waiting to be cultivated and transform into something meaningful and productive. As architects, we must capitalize on pockets of opportunities. To address the residues formed by infrastructure is more than simply filling the in-between physically but to take advantage of the qualities found in these spaces to make the void full of purpose. Residual spaces can be a valuable asset and be fully optimized in urban areas where land is limited. Hong Kong, as a land-scarce urban agglomerate, with incredibly high density and steep topography could benefit from developing in urban voids. Hong Kong could reinterpret the leftover spaces within the city as an available land source to deliver the various programs necessary to support

the function of the growing city, in-between the multiple layers of the urban fabric.

Possible Opportunities:

1. Alternative public land acquisition
2. Social relevance
3. Design innovations to deal with the compelling forces that co-exists in the situation

3.2 A Situation in Hong Kong

Hong Kong is one of the world's densest cities. A highly urbanized and developed city situated in the southern coast of China. Its geographic position at the harbour has made the city an attractive centre for international trade between the East and the West. Today, Hong Kong is the third largest city in the

global economy, after New York and London respectively. As a major economic center in the world, it has attracted a continuous number of immigrants. In present day, the city has a population of seven million inhabitants living over a small landmass. Large amount of hilly terrains are classified

as natural reserves, leaving only 24% of the land designated to accommodate the 7 million inhabitants. The results Hong Kong, being one of the most densely populated cities in the world. (Fig. 3.01)



Figure 3.01:
Hong Kong is one of the most densely populated places in the world. Pockets of residual spaces are dispersed throughout the city fabric.

Source: Cornelius Paas / Still Pictures

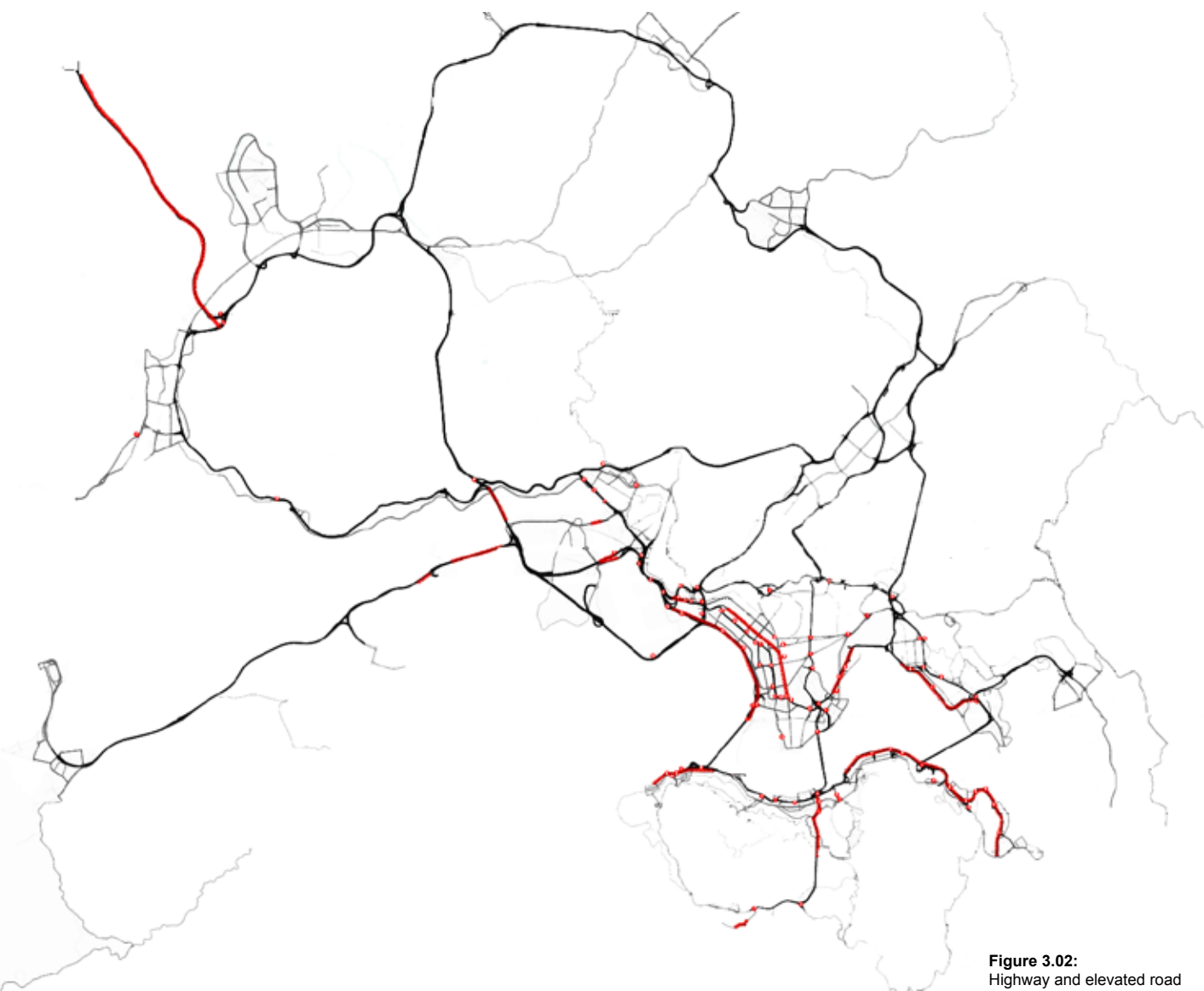


Figure 3.02:
Highway and elevated road
network in Hong Kong creates
residue across the urban
fabric on the pedestrian level

Land availability is always in demand for all types of development to address the needs of the citizens of Hong Kong. To add to the complexity of the situation, Hong Kong is also ranked top in the world for the widest income gap. Extreme wealth polarization and continuous private development driven by capitalism has pushed many citizens to the margins. One fifth of the people in Hong Kong lives below the poverty line. The city estimated in 2000, there was approximately 27km² (2.5% of the landmass) of vacant land available for development. A portion of the land in this calculation is already under development by private corporations. Government continues to sell public land to private developers to maximize the city's income. Land sale plays a major role in generating government revenue in Hong Kong. As a result of private development domination, spaces designated for public assistance (subsidized housing, community facilities, and small businesses) is even more limited. Traditionally, the city would increase the land supply by reclamation. Approximately 68 km² of land in Hong Kong today is the result of land fill. However this method is no long available since the harbour protection laws were established in 1997. Neighbourhood redevelopment is a possible strategy to respond to the growing need for space within the city. However, it requires a huge effort to relocate the citizens out of the old districts during the demolition and construction process. In addition, there are very few temporary facilities to accommodate the residents and are often located in remote areas with limited transportation services. Hence, urban renewal projects are rarely

realized in Hong Kong. Residual spaces left behind by transportation development, voids that are overlooked in the city, spaces physically internal to the fabric but external in our minds can be utilized to provide a new and meaningful dialogue between the city, the people and its environment.

3.2.1 Multiple Grounds

The inherent weakness of lacking developable land to supply basic spatial requirements for the citizens of Hong Kong has been a problem for many years. With a shortage of natural land to build on, Hong Kong has explored many ways to generate new ground planes as a response to its spatial scarcity. Vertical expansion and intensification are two processes that have dominated Hong Kong's urban growth. The ground planes are multiplied and layered on top and under to produce new surfaces. Having established new grounds, new modes of movement are needed to access the various ground planes. It is noted that Hong Kong is not just a vertical city, but a volumetric metropolis in the book "The Making of Hong Kong". Concentrated vertical development allowed for three-dimensional connection access transform the vertical rising from a single ground plane into legible volumes served by multiple grounds. Elevated sky bridges for both pedestrian and vehicular circulation are introduced to connect the extensively layered grounds. Yet at the same time, the large scale infrastructural work often destroys the fabric that surrounds it. Vast amount of space are wasted underneath these interventions. (Fig. 3.02)



The urban design of the city were overly concentrated in connecting the city in a macro level that it has forgotten the space surrounding the new network could have potential value in a micro level. Land have always been available within the city, but often neglected and overlooked as it is deemed inhabitable as the residues of urban growth. The residual spaces within the city are in fact a planning problem, but at the same time it is an architectural opportunity.

3.2.3 The Residues

The city authorities have almost venture out all the

possibilities to acquire more space to provide for its ever growing population. In recent years, the government is more open to the concept of adaptive reuse in old factory buildings and have begun to consider the residues spaces under the expressway for appropriation in the city. Under-bridge spaces have always been seen as a void in the city that could not offer much practical function. (Fig. 3.03) With nearly 2000 overpasses and 700 footbridges in Hong Kong, can the space that surrounds the transport infrastructural work be integrated with the rest of the city that addresses some of the spatial needs of the people?

Figure 3.03:
large amount of space underneath the elevated roads could provide a solution to alleviate the land scarcity in the urban environment.



Planning guidelines from the city's planning department have specified several restrictions that need to adhere to for developing in the residual territories at the perimeters of elevated road networks. Although there are no set standards from the authorities upon the usage of the land beneath the infrastructure, however it is suggested that the flyover (overpass) and footbridge sites should only be considered as "alternative solution space upon exhausting all other suitable sites" as stated in Section 7 of the Planning Standards. As the city runs out of developable land, residual spaces could be a viable option for future development. The policy

has further detailed structural, fire safety, traffic and environmental concerns that should be taken into consideration for any proposed development in these types of spaces. In addition, the planning department strongly encourage to integration of greenery and soft landscape to improve the visual appearance of the space. Therefore, the city believes that they have found the best purpose for these spaces, which is by filling it with greenery and landscape. (Fig. 3.04) However, as explored in previous chapters, the residual space could foster much more meaningful spaces for the communities in the surrounding context. Another note worth mentioning in the



GAS STATION



CAR PARK



BUS TERMINAL



PLAYGROUND

STORAGE

PUBLIC WASHROOM

LANDSCAPING

BASKETBALL COURT



Figure 3.06:
Current uses beneath the overpass in Hong Kong (from left to right) includes Gas Station, Car Park, Bus terminal, Playground, Storage, Public washroom, Green landscape and Sports field.

planning recommendations is that, the department also recognize that appropriation for the spaces around the large scale infrastructural work should have been consider prior to the construction of the road network. The city recognizes that the leftover spaces are the evidence of the planning flaw. However, the remnants are now pockets of opportunities that only architecture could address.

Apart for landscaping, various small interventions have been introduced by the city to these sites in recent years and the diversity of usage is expanding. Early appropriation includes storage facilities, car parks, gas stations, public toilets, sports field and playground area. However, aside from sports fields and playgrounds, the other uses seem to be lacking a connection with the rest of the neighbourhood both visually and socially. It may appear from the identification of different usage that currently exists in the city that the spaces beneath and surrounding the elevated traffic infrastructure are being well utilized. However, in reality most of the spaces are actually left vacant and inaccessible by a physical barrier. Another reason that contributes to the under-usage of residual territories in the city is the environmental limitations. The space surrounding the infrastructure is often lack day lighting and are subject to noise and air pollution. However, developments adjacent to the highway also face the same environmental concerns, yet the city did not exercise any standards to resolves these issue. Therefore, the outlaying conditions should not but a limiting factor (but not to be ignored in the overall design consideration)

when attempting to re-appropriate these sites. Other physical constrains includes headroom clearance and irregular site boundaries that makes the site seemingly problematic to execute more complicated programing. Through creativity and unconventional design approaches, the presupposed conditions could be challenged and transform leftover spaces to advantageous public spaces.

The residual spaces have great potentials to address some of the immediate issues present in Hong Kong. The government has been aggressively searching for land on which to build more affordable housing and public amenities to facilities the social and physical wellbeing of its citizens. The residual spaces at the margins of infrastructural work maybe an answer to resolve the city's spatial shortage that is outside the conventional logic. Unused land in the city center might be thought of as a valuable asset going to waste. While leftover spaces are rarely (or never) considered by private developers who typically are more interested to build high-end luxurious properties for the rich and elite in the city in oppose to public good. The city and non-government organizations could seize the marginal space that is already own by the public to assist the marginalized groups who are impacted the most in the land shortage conundrum.

CHAPTER FOUR

ARCHITECTURE OF THE RESIDUAL SPACE / CASE STUDIES

Developing on the leftover space created by transport infrastructure is not a new concept. There are numerous much-celebrated projects that document this idea. Elevated freeways slice through cities all over the world. They make getting into and around cities incredibly easy but at the same time they segregate and isolate communities at the local level. Large-scale infrastructure work results fragmented parcels of underused, unpleasant and unproductive spaces throughout the urban fabric. The leftover spaces disrupt the urban tissue, leaving it incomplete and throw into question the use of those spaces. However, somewhere in between those impermeable boundaries is a ton of potential. The contentious spaces that surround the overpasses are often underutilized – or utilized in ways undesirable to the general public because the allowance for any development would require an immense shift in the city's formal system. Cities around the world are beginning to take advantage of these dead spaces as usable parts of the public realm through both formal and informal acts and have been proven to provide valuable community assets. This is especially evident in parts of the world with the problem of land shortage. Creative reuse of





Figure 4.01:
Playing Underneath, Guangzhou,
China.
Source: MAP Office

the peripheral spaces can remove local barriers caused by infrastructural work and establish continuity between neighbourhoods by reincorporating it into the public realm, while providing a viable option for extra space to relief the pressure and expenses for land acquisition in extremely dense urban environments. The following projects analyzed demonstrate creative potentials these spaces offer outside the conventional logic and validate societal relevance as it reinforce communities in the contemporary city.

4.1 Informal Acts

Residual spaces found between, under and over infrastructural forms in the urban core are usually small, irregular and enclosed. The difficulties present in the leftovers spaces seldom attract official appropriation in the city. This enables a wide range of creative informal activities to occur on these sites other than homes for street sleepers and canvas for public art. The activities that arise from the public informally could be quite dynamic, particularly in

developing nations and parts of the world with high population densities, where the flows and social connections in the urban fabric are strong. Spaces underneath the elevated expressway could shield away from sun and rain, providing protection while being outdoors. With a minimum investment for simple installations, the space can be transformed into a practical place. Underneath a highway in Guangzhou, China, pool tables were set up across the void and invites pedestrians to come in and play. (Fig. 4.01) Weekly markets, outdoor theatres, and sport fields and many other publicly engaging activities can emerge informally from the overlooked spaces. A free school running under a mass transit bridge in New Delhi, India is another example of informal usage of the leftover spaces. At least 30 children living in the neighbouring villages have been receiving free education from this school since 2009. For two hours every weekday, the children learn in this space that was once considered inhospitable. (Fig 4.02)



Figure 4.02: Informal yet innovative ways to use residual spaces. Rajesh Kumar, the founder of a free school for slum children, use improvised blackboards to teach his students under a transportation bridge in New Delhi, India.

Source: AP Photo/Altaf Qadri

3.2.1 Open Public Space

The struggle to find open public space for urban dwellers intensifies as cities continue to increase its density. Infrastructure may be seen as the ultimate public space in our city. It is generally paid for by the city and is accessible to everyone. The peripheries of infrastructural work could be an extension of the public realm. Communities need open public spaces because it can offer spontaneous interaction between people which is an essential component of a healthy urban living as suggested by David Engwicht in his work, *Reclaiming Our Cities*. Open exchange spaces can reinforce the community structure and identity. The residual spaces at the perimeters of large scale infrastructure work could provide a viable option for re-adaptive open space use. This could be achieved by proposing meaningful programs that connects to the surrounding context. Our city is one of different cultures with different perceptions and needs, so the open space appropriated for the people living in each community and neighbourhoods must be taken into account (Keller, 1990). Re-appropriating the residual space as a public domain is only one of the many possible options for these types of space but of the easiest program to conceive and be accepted by city authorities and the society.

Underpass Park, Toronto, Canada PFS Studio, 2013

As density continues to increase in urban areas, designers have to look at spaces creatively within in city, including those previously considered marginal, and unpleasant spaces that surrounds existing road infrastructure. The Underpass Park, located under and around two elevated highway exemplifies innovative ways to use residual territories. (Fig. 4.03) In no doubt, activating the city's in-between areas is a challenging task. However the park was about to takes full advantage of the neglected lot as an interstitial space between two communities. With 2.5 acres of space beneath the concrete highway infrastructure, PFS studio proposed various programs across the site (Fig.4.05) to bind together two residential developments nearby and at the same time demonstrate how design can transform and add value to derelict spaces that was once deemed inhabitable. The north-south running River Streets divides the site into two halves. Swings and climbing structure for children are located on one side, while basketball courts and a skateboard park on the other side sits under the highway. The concrete beams and columns of the overpass provide year round weather projection. The facilities within Underpass Park can be used rain or shine. At night, colour changing lights are projected onto the soffits of concrete arches creating an even more attractive ambience (Fig. 4.04). In addition to



Figure 4.03:

Underpass Park in Toronto turned a neglected space at the edge of the city into a vibrant and playful public space for neighbouring communities.

Source: <http://www.convercite.org/wp-content/uploads/2013/02/underpass-park-3.jpg>



Figure 4.04:

Underpass Park at night. The recreational space is illuminated with coloured lights in the evening, adding greater depth to the overall sensory experience.

Source: Architectural Record

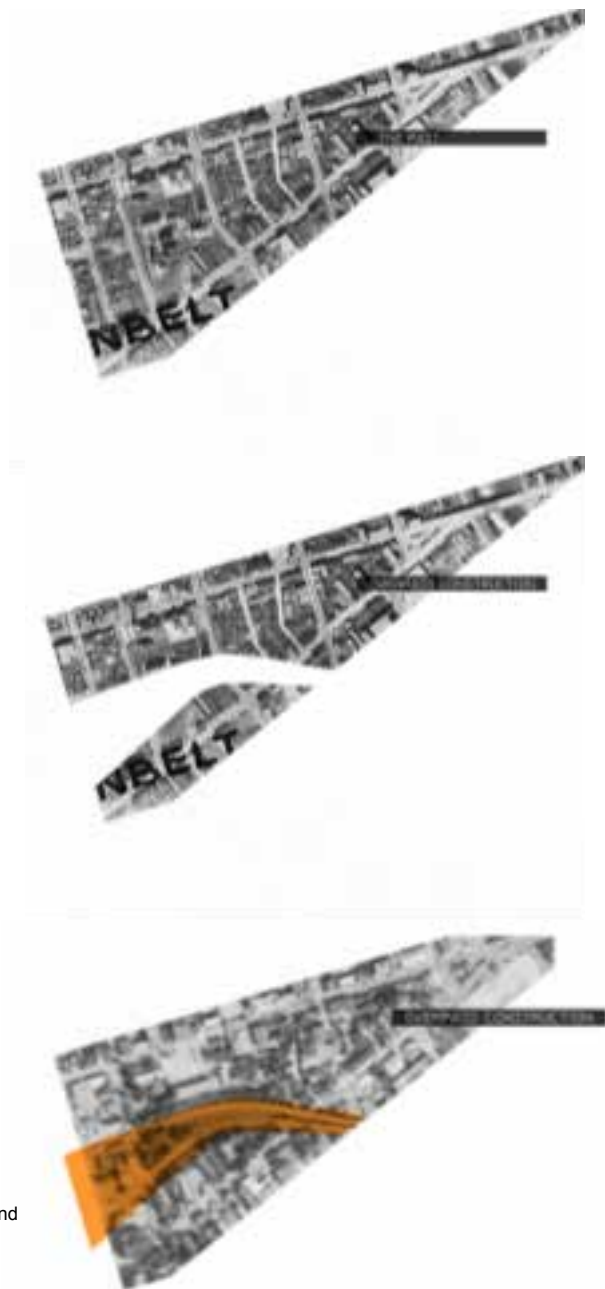


Figure 4.06:

Aerial view of Corktown before (1940s) and after (2013) the construction of the Richmond and Adelaide elevated expressway.

Edited by Author



Figure 4.05:
Underpass Park is situated under two elevated expressways and in-between two communities. The new park invites users from both neighbourhoods and establishes a new continuity across the surrounding context.

Source: PFS Studio

1. Passive Park with wall seating
2. Children play area
3. Community flex space
4. Basketball courts
5. Skate Park

electric lights, mirrored panels are also installed on the underside of the expressway to reflect natural light into the dark underpass during the day. The park was completed in the summer of 2013 and since then it has been an important community asset.

The project is a success as it was able to address several factors as a residual void with in an urbanized environment. One is the fragmentation of neighbourhoods through insensitive siting of the Richmond and Adelaide overpass. Prior to construction of the overpass in, this site was part of the vibrant Corktown neighbourhood in the east end of the city. In the early 1960s, at the heart of the

neighbourhood, a significant portion was demolished to make way for the elevated expressway (Fig. 4.06) The Underpass Park is able to restore the continuity of the broken fabric physically and socially. Meanwhile as the first project in Canada to ever realize the leftover spaces in the city, it raised the awareness of the potential value residual spaces inherently possess.



Figure 4.08:

Site Plan and Elevation of the Service Centre shows the relationship between the building and its surrounding environment.

Source: Barrie Ho Architecture Interiors Ltd.

4.2.2 Building Underneath

The Hong Kong Federation of Women T.S. Kwok Service Centre, Hong Kong Barrie Ho Architecture Interiors, 2011

With land at a premium in Hong Kong, the residual space formed by infrastructure could provide an alternate solution to alleviate the city's land shortage problem. Elevated bridges for both pedestrian and vehicular traffic are the response for circulation in the super dense city. In fact, Hong Kong is referenced as a city without grounds with nearly 2000 overpasses that connects the city at large. As with most of the city's overpasses, the space beneath are no more than emptiness under concrete slabs. Local architectural designer Barrie Ho questioned the use of the urban void under the overpass in the center of Hong Kong as he was asked to design a service centre and headquarters for a non-government organization. The proposed building is situated underneath the Canal Road flyover, an elevated roadway that bisects through some of the busiest sections of Hong Kong. It was once regarded as a space not suitable for inhabitation, but with immense creativity, the designer took an unconventional approach to articulate a design and transformed the site into a functional and meaning place.

The Hong Kong Federation of Women T.S. Kwok Service Centre is a single storey building that stretches approximately 80 metres and occupying

an area of 9500 square feet under the busy expressway. The building includes spaces for administration as well as a multi-function room, a lecture hall and an exhibition space for numerous activities that could occur within this facility. The building façade is largely made up of glass panels to establish a visual connection with pedestrians on the two streets that runs parallel on both sides of the building. (Fig 4.08) More importantly, the transparency makes the building more inviting to the surrounding users. Not only did the building filled the void to give a new life to and purpose to the residual space, but it also rejoined the torn urban fabric as it renewed the dynamics of the communities on both sides of the elevated infrastructure. The building form was dictated by the physical conditions of the site. The designer has taken into consideration the fact that it is a building that is situated in the intersection of several major roadways in the city. The building sets back from the concrete columns that support the highway above. The height of the building stops at 2 metres away from the underside of the overpass, to minimize noise and vibration from the structure above.

The Hong Kong Federation of Women T.S. Kwok Service Centre is a project well established to re-appropriate the overlooked urban void. Acquiring space in Hong Kong often means a high cost and presents great challenges especially to NGOs that operate on donations and subsidies.

Figure 4.07:

The HKFW T.S. Kwok Service Centre in Hong Kong exemplifies that leftover spaces under the elevated highway are one of the viable options for extra space in the densely populated Hong Kong.

Source: Barrie Ho Architecture
Interiors Ltd.



Residual space is an inexpensive option for public work as they have little prospect for private development. The design demonstrates creative uses for leftover spaces in cities where every inch counts. Moreover, the building did not only fill in the void but has renewed its identity. The interstitial space was once an invisible barrier on the pedestrian level between two separated communities. The site was the edges of two communities, but now adjoined and blurred with the architecture. Prior the introduction of an architectural intervention, the site was seen as a useless space. However, today the space as an NGO office and service centre provides to help those in need. With architecture, the residual space has transformed from useless to a space that provides. This phenomenon was a result of an unconventional and creative approach.



Street Children's Home, Caracas, Venezuela Urban Think Tank, 2001

One of the factors that lead residual spaces in the margins of large infrastructural work a bad impression is it is typically seized by the homeless, the marginalized people of our society. Street sleepers often live under the elevated freeway to be protected against weather conditions. While most people turn away from the residual space, the void becomes a home without walls for the homeless. The space beneath elevated infrastructural work can actually be inhabited. This idea was further expanded by Urban Think Tank in their Street Children's Home project in Caracas, Venezuela (Fig 4.09). Using the unutilized space underneath the Francisco Fajardo highway that is often ignored and overlooked, the designers created a facility that offers a variety of support to the underprivileged groups. The programs include an orphanage on the ground floor with a dormitory that provides accommodation for more than 30 streets children (Fig. 4.10). The basketball court and a soccer field above the orphan's residence on the upper floor is roofed and shaded by the overhead highway bridge (Fig. 4.11). The designers took consideration of the conditions present on site to their advantage (Fig. 4.12). Adjacent to the play courts is the wood workshop that acts as a trade school and providing the skills to stimulate entrepreneurship. Of to one side of the building is an external garden, used to grow a small plot of corn to be consumed by the residents of this facility.

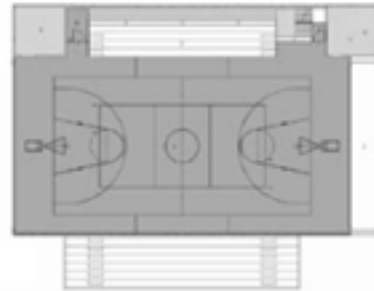


Figure 4.11:
Upper level floor plan with a sports facility

Source: Urban Think Tank



Figure 4.10:
Ground floor plan

Source: Urban Think Tank

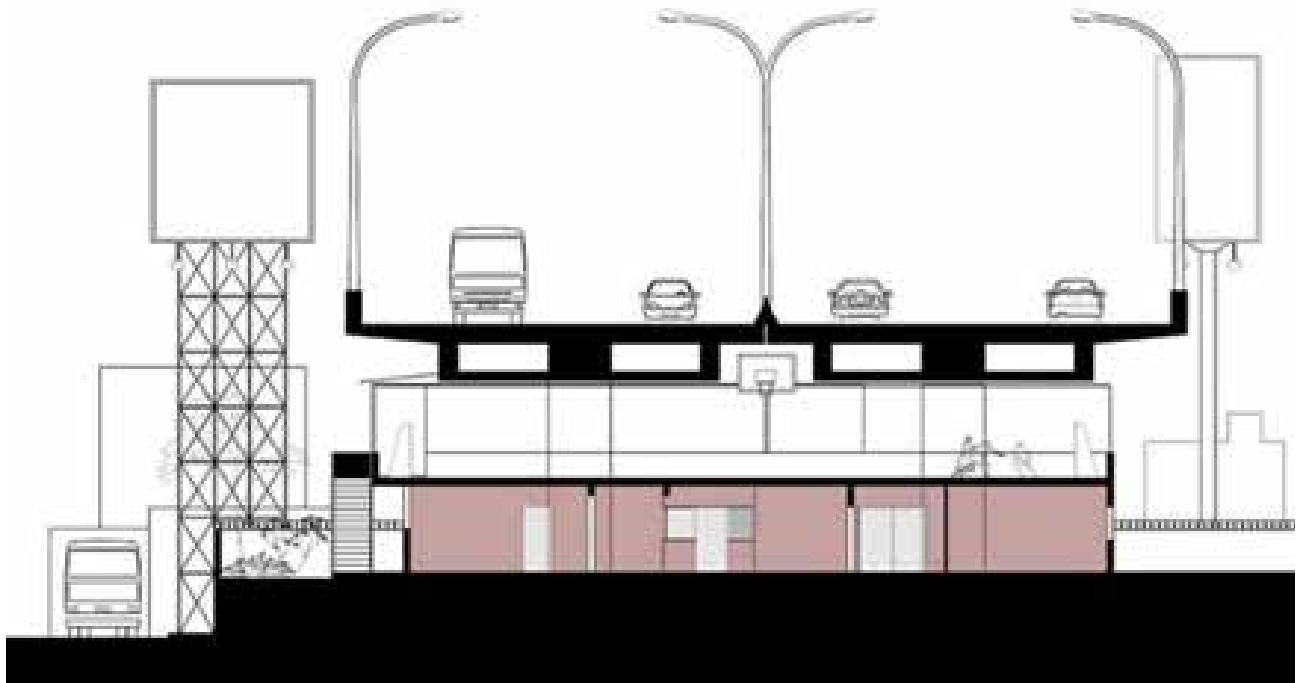


Figure 4.09:

The Street Children's Home is an orphanage and sports field situated beneath an elevated highway.

Source: Urban Think Tank

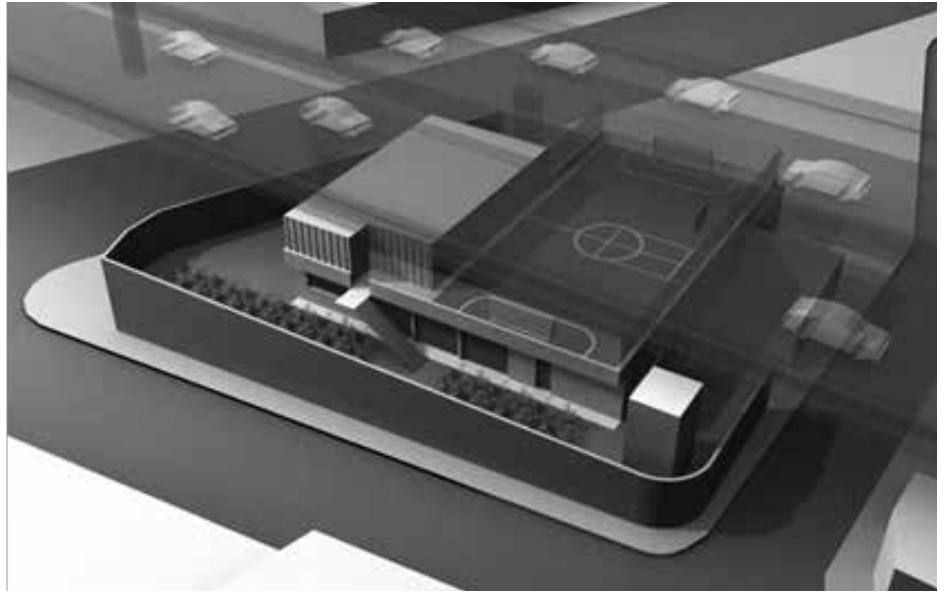


Figure 4.12:
Roof Top Basketball court utilizes the elevated roadway as a canopy that covers the outdoor play area

Source: Urban Think Tank

Integrating architecture and infrastructure can draw inspiration from the inhabited bridges. The inhabited bridge typology has a long history that dates back to the medieval times such as the early London Bridge. The type suggests the combination of infrastructure and a building in the same location. It adds multiple dimensions and meaning to the project and to the city as it serves as a functional space that offers program that attracts people to settle, meanwhile it facilitates movement and circulation as an extension to the continuous fabric of urban flows. Although in the historical context, elevated infrastructure, or bridges mainly serves slower traffic movements for pedestrians. Therefore providing points of interest

for settlement along the type can be easily achieved. The unification of the inhabited bridge creates a continuous harmony between architecture, the infrastructure, environment and social life. Modern day infrastructure in striking contrast disrupts the urban fabric at a micro-level even though it is able to connect greater distances and at a much faster speed. If we were able to unify architecture and infrastructure coherently in one space in the past, can we not incorporate human activities with the high-speed infrastructure of today? The residual voids are pockets of opportunities that are waiting for an intervention to activate the infrastructural architecture hybrid.

A topographic map of Hong Kong is shown in the background. A red line, representing the West Kowloon Corridor, runs diagonally across the map from the upper right towards the lower left. The map shows various geographical features like hills and valleys.

CHAPTER IV

SITE CONTEXT

5.1 Defining Margins

From the various precedents and literature reviewed in earlier chapters, both formal and informal acts of appropriation for the residual spaces correspond in one way or the other. These adaptations demonstrate that the residual space is not an ambiguous concept but in fact a practical yet unconventional way to realize societal needs. The residual spaces is a public space, it truly belongs to the communities, the people of the city. The residual space is an interstitial space, literally and symbolically, it is physically in-between highways and city fabric, but also at the junction of infrastructure and landscape, mobility and stillness, networks and isolation, a space of in-between tensions and contradictions, but tensions that can be turned into opportunities and be resolved through creative redevelopment. The residual space is also a marginal space physically at the edge of infrastructural work. In essence, the word margin means at the edge, the border and the periphery, it implies the meaning that something is on the verge of its existence. The highway residual spaces are

physically situated in the city but often excluded and divides space that results unnecessary separation. Sham Shui Po is one of the older districts of Hong Kong that has been divided due to the development of the elevated roadway. (Fig 5.01) The neighborhood was once a vibrant hub for transportation and commerce, but now separated by the West Kowloon Corridor. The highway division does not only make it difficult to connect the two divided parts physically, but it is socially separated as well. An architectural invention in the residual space underneath the West Kowloon Corridor could provide the opportunity to restore the broken harmony between the cityscape and society. The intention of this thesis project is to capitalize the opportunity to social relevance and potential that is present in these spaces. Creative redevelopment does not solely mean proposing a well thought and aesthetically pleasing design, but calls for a creative and relatively unconventional design approach to restore and revitalize the broken city fabric.

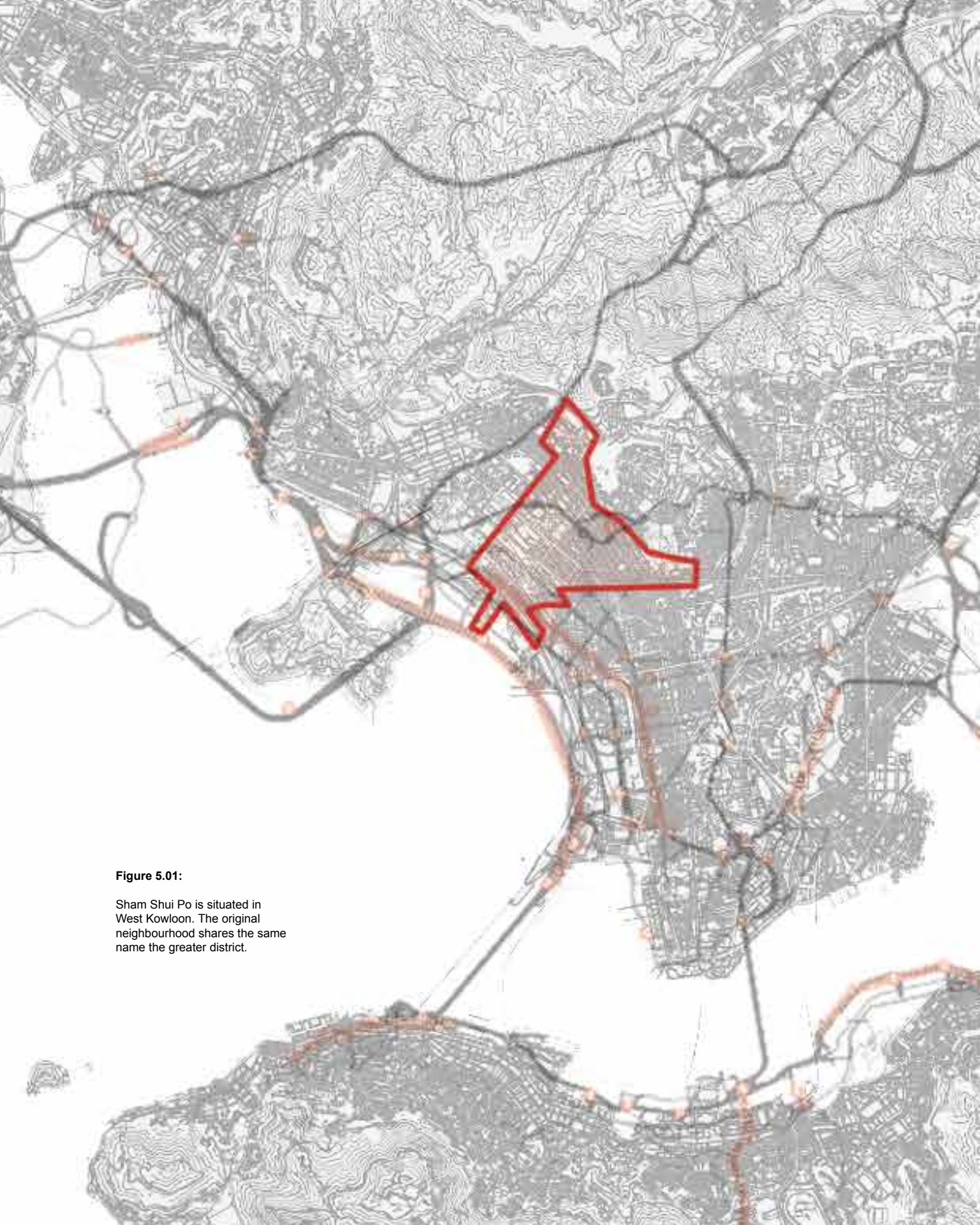


Figure 5.01:

Sham Shui Po is situated in West Kowloon. The original neighbourhood shares the same name the greater district.

5.2 Site Context

Sham Shui Po is one of the earliest developed urban district in Hong Kong. The geographic location of the neighbourhood as it situates in the northwest of the Kowloon Peninsula had once been the central hub for commerce, industry and transportation. However, it is now most widely known as a district that is divided by the elevated West Kowloon Corridor into an old and new town. The name Sham Shui Po means “deep water pier”, and as the name suggests it was once closely related to the harbour, the original land form was a cape that protrudes out to the water. A ferry terminal situated at the edge provides connection between Kowloon to Hong Kong Island across Victoria Harbour. (Fig 5.02) However, due to a number of reclamation projects including the construction of the West Kowloon Corridor, an elevated expressway that now runs above and through the Sham Shui Po neighbourhood has destroyed the city’s fabric on the local level. The land the infrastructure hovers over is left vacant and inaccessible to the crowded population.

here are currently two major elevated expressways that run across the neighbourhood. One is the West Kowloon Corridor (Route 5) and the other is The West Kowloon Highway (Route 3) (Fig. 5.03) The latter was constructed to facilitate faster movement

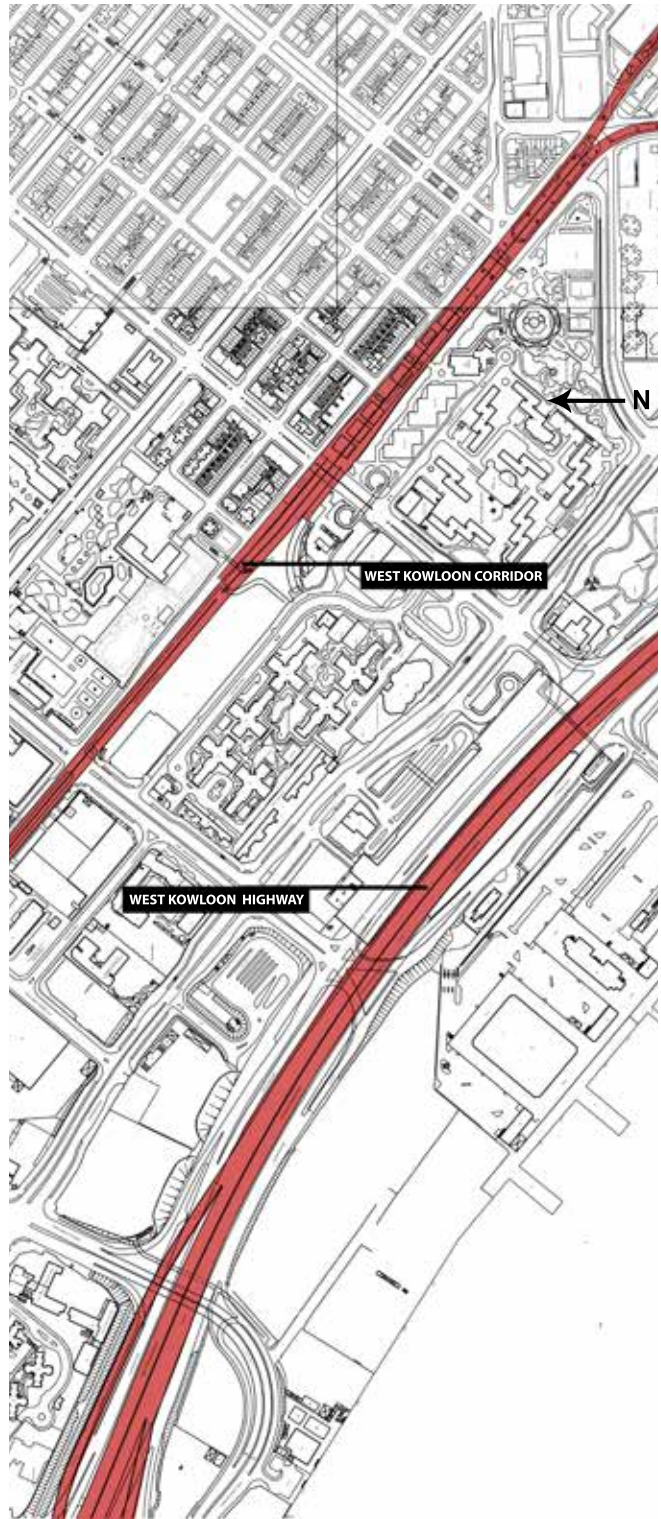
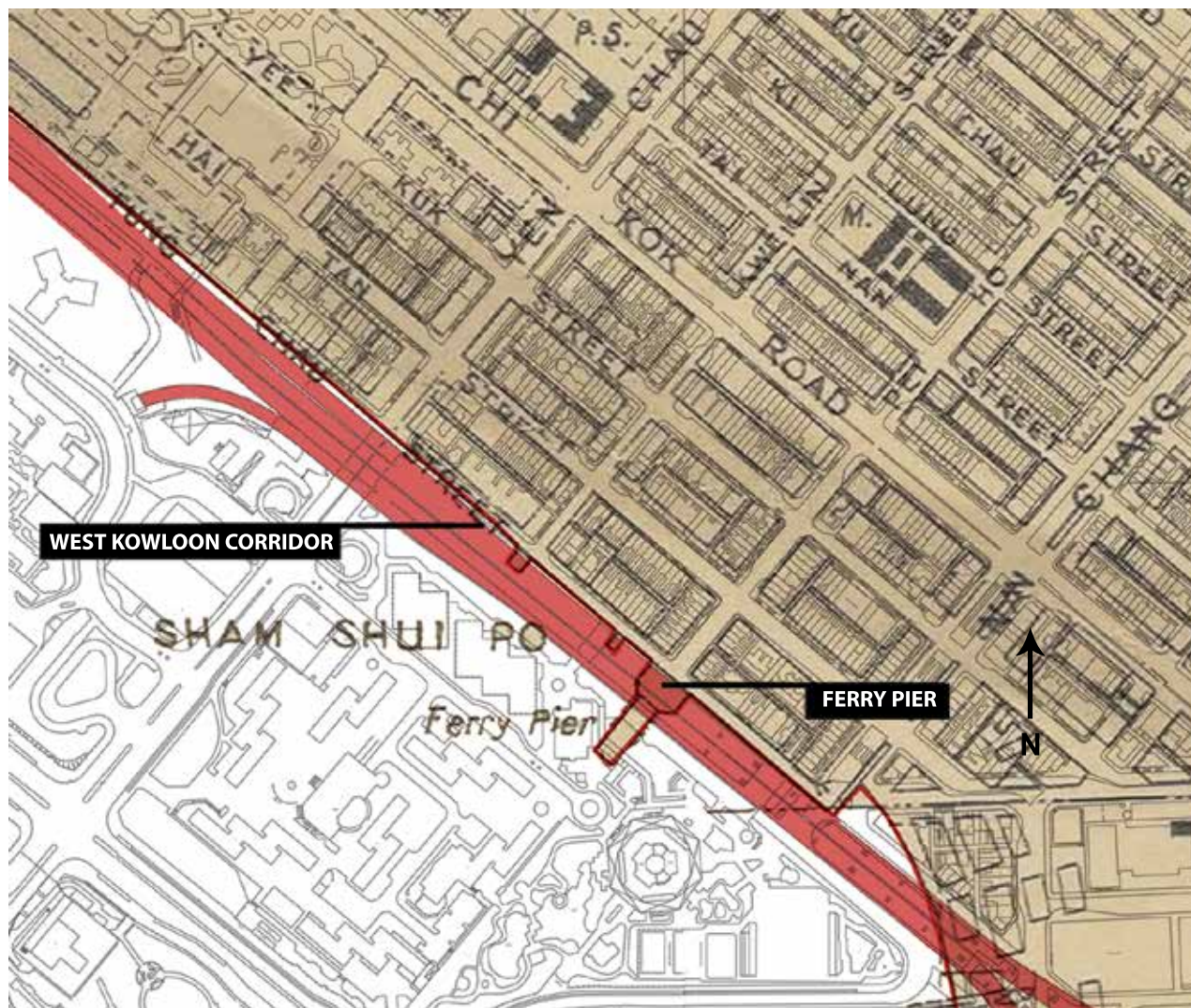


Figure 5.03:
Two elevated highways run through the neighbourhood





 SHAM SHUI PO

 DEEP WATER PIER

Figure 5.02:

Historical map overlay marks that the West Kowloon Corridor divides the old and the new town of Sham Shui Po.

The map also indicates the Ferry Pier and original shore line that was deeply tied to the neighbourhood, which is also evident in the name of the district.



Figure 5.04:

Site photo. The space beneath the infrastructure is fenced off.

than the former. The West Kowloon Highway runs relatively close to the edge of the landmass, while the older West Kowloon Corridor is situated well within the residential areas. The space beneath the West Kowloon Corridor is an invisible barrier that separates two local communities. It provides very limited access between the two sides hence it disrupts the continuity of the fabric. The large concrete corridor hovers above the vacant land that is fenced off by a metal mesh. At some parts of the lot, concrete panels are put up along the edge to reinforce there is no entry. Likely put up to keep informal activities such as homelessness and street artist and vendors away. (Fig. 5.04) For the scope of the project, I will attempt to address a section of the West Kowloon Corridor with the intention as a

pilot project. Due to the scale and complexity of the problems that could be addressed, and the limitless possibilities these types of space inherently possess, the design intent exerted is meant to be a catalyst that will demonstrate the several things. First, it validates the residual space is a viable alternative as developable land. It rejects the idea that green landscape is the best option for these sites as proposed by the government. The project will argue that sites could foster as good community space for the public. Most importantly by proposing an architectural intervention to the leftover spaces, it can create continuity in the broken urban fabric physically and socially and will be perceived as an integrated component of the urban body.



Figure 5.05a:

Site Photo, Underside of the West Kowloon
Corridor measure 8.8m



Figure 5.05b:

Site photo. The elevated roadway divides the
neighbourhood into two distinct area. To the
North side, the old original town and on to
the South, Tung Chou Street Park and new
highrise residential towers

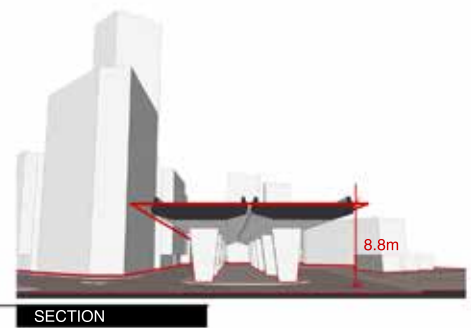
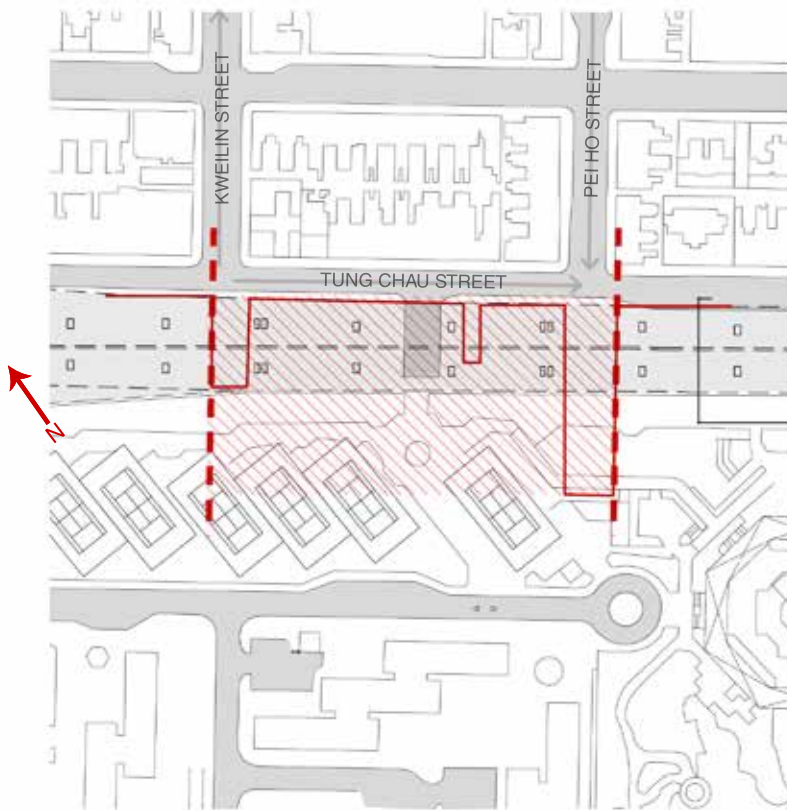


Figure 5.06:

Site Plan, The outline indicates the old historical Ferry Pier which is the test site

5.2 Site Selection

The site selected to test the idea can be found beneath the West Kowloon Corridor, adjacent to Tung Chou Street on one side and Tung Chou Street Park on the other (Fig. 5.05). Although the site as a residual space is typically regarded as a barrier that separates the city, however the location suggest that it is an interstitial space as it situate between various cross roads. The four-lane elevated roadway above measures approximately 20 meters wide. The height between the ground plane and the soffit of the infrastructure measures to be 8.8 meters which allows sufficient space for 2-3 storey tall structure. (Fig. 5.06)

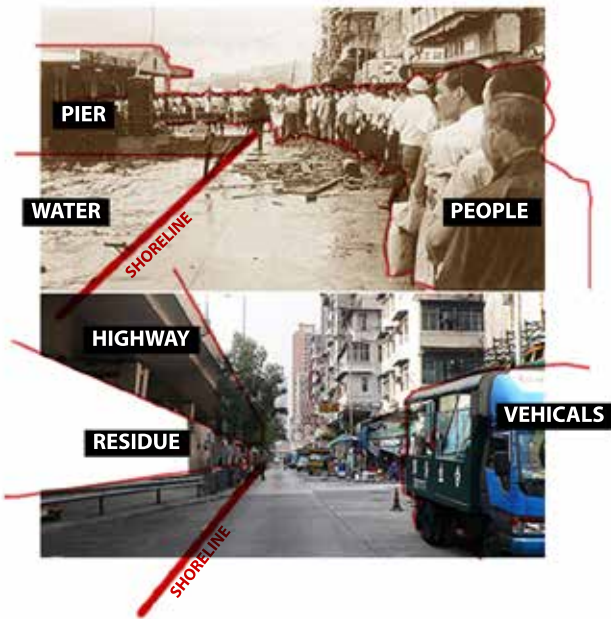


Figure 5.07:

Tung Chau Street was once the coastline of Sham Shui Po. The photo on top was taken in the 1920s, and the photo beneath is Tung Chau Street today

The several phrases of urbanization are clearly evident in the physical fabric of Sham Shui Po. As the name of the neighbourhood suggests, Sham Shui Po, meaning “deep water pier” used to have a close relationship with the water. It was originally a fishing community that was surrounded by a wavy shoreline. (Fig 5.08, Index 1) In 1842 when Hong Kong was colonized by the British, Sham Shui Po was at the fringes of the division. Boundary Street, initially developed by a row of bamboo fence marked the political border between China and the new found colony. The Sham Shui Po district was situated on the north side of the border that still belongs to China. However in 1898 the land north of Boundary Street was leased for ninety-nine years to the British. The government drafted new plans for Sham Shui Po and executed the first land reclamation project in the area. The coastline was straightened and an orthogonal grid was imposed on Sham Shui Po. Hence, the street pattern north and south of Boundary Street runs in different orientation. (Fig. 5.08, Index 2) The second stage of reclamation took place in 1919. The project introduced a new Ferry Pier to the neighbourhood at the intersection of Pei Ho Street and Tung Chau Street which is in close proximity to the site selected for this thesis project (Fig. 5.07). Tung Chau Street at one point was the coast line of the neighbourhood (Fig 5.08, Index 4). However, this condition changed as the Sham Shui Po area when through another stage of reclamation in the 1980s (Fig 5.08, Index 5) the total area of this district was enlarged, but the pier was filled and disappeared in the horizon. The land was reclaimed for the construction of highways and public housing estates (Fig 5.08, Index 6).

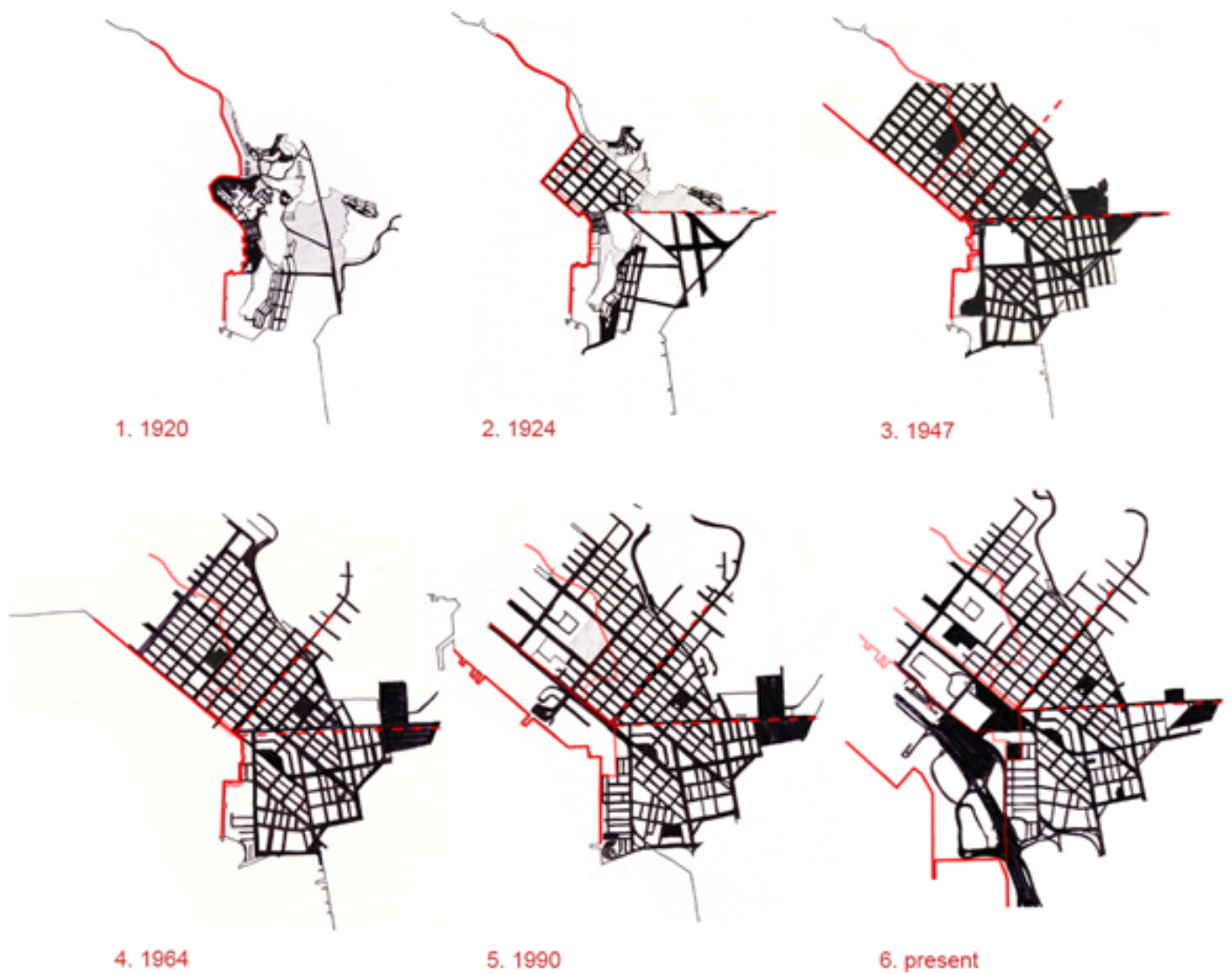
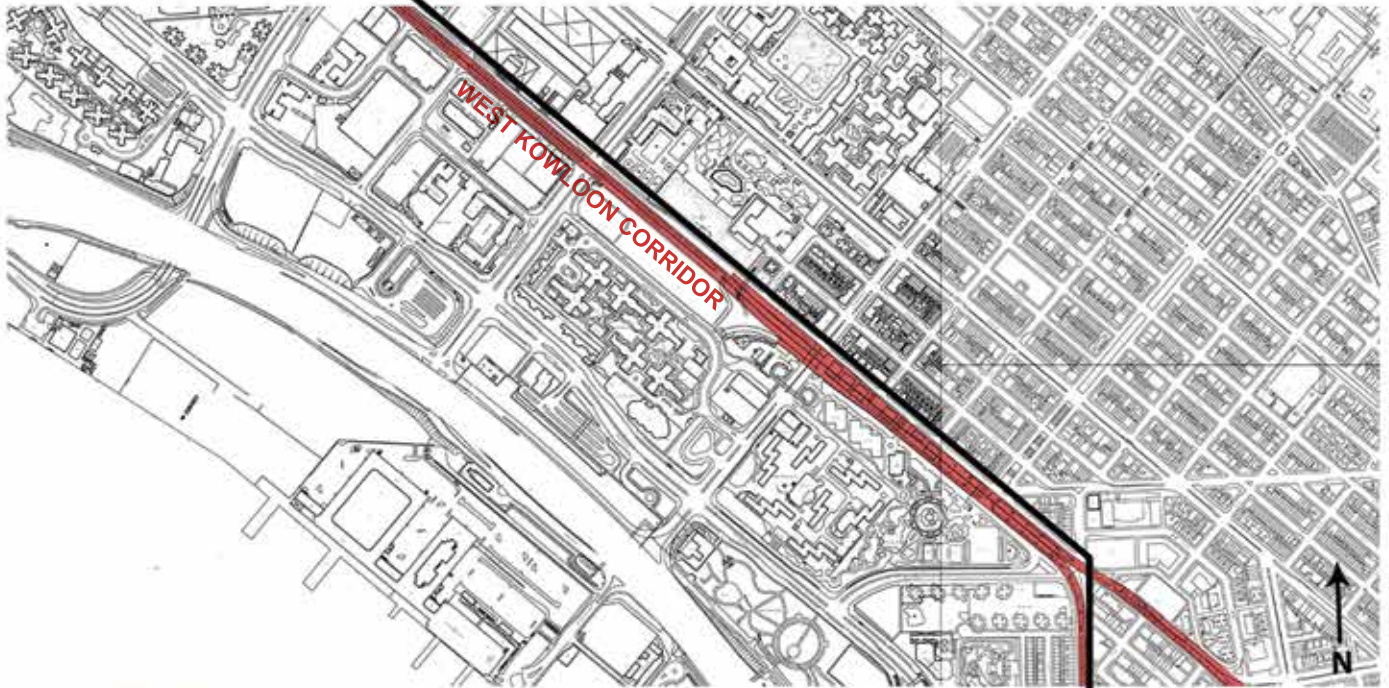
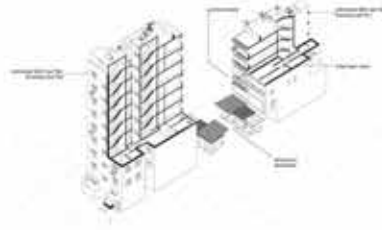


Figure 5.08:

Over the past century, the Sham Shui Po area went through several stages of reclamation. The coastline was changed several times as indicated in red. The horizontal dash line marks Boundary Street. The diagonal dash line identifies Nam Cheong Street, which is an important artery in the neighbourhood.

OLD TOWN
built in the 1930s



NEW TOWN
built in the 1990s

When Sham Shui Po was first urbanized, the neighbourhood was largely made up of four storey tall Chinese residential tenements with shops on the ground floor. These apartments are now modified into micro living space and serve as substandard housing for the underprivileged. Newer blocks in Sham Shui Po are made up of high-rise apartment towers that are no less than 40 stories. The tall residential towers are mostly located near the waterfront. (Fig 5.09) The major division between the old and the newer housing type is Tung Chau Street, which is where the selected site is situated. The building height variations also provide traces of when that part of the community was developed.

Today Sham Shui Po is known for their cheap electronic goods and mostly for the textile and clothing businesses. It is a vibrant community during the day and at night. The area is home to the lower income working class. Heighten housing prices pushed the under privileged into smaller compacted dwellings that does not even provide a sense of home. Hence the urban condition of Sham Shui Po area also exhibits various social issues that alternative design strategies could probably address.

Figure 5.09:

Old community fabric North of the West Kowloon Corridor are mostly made up of old tenement buildings built in the 1950s. They are on average 5-8 stories tall residential buildings that are unique to the Hong Kong culture.

South of the elevated roadway is the newer part of Sham Shui Po. 40 stories tall high rise residential towers and large parks can be found on this side. The fabric abruptly changes from the old to the new from the highway division.

CHAPTER SIX

DESIGN APPROACHES

6.1 Design Considerations

I reimagine the void being a place of exchange, a space that promotes interaction between people, the economy and the environment. The architectural intervention should integrate not just the infrastructure and create a visual continuity, but develop coherency across various components of the urban body. It requires a system that will allow the integration of all the elements that are present in the surroundings to establish a new connection for the lost space.

The most essential design strategy is to establish a connection with various elements found present in the current context. These “connectors” can be generalized into three categories: social, environment. After a detail analysis of the neighbourhood, the unification of the following three factors will add to the success of the proposed architectural intervention for the leftover space underneath the West Kowloon Corridor in Sham Shui Po.

SOCIAL CONNECTION

The first component to consider as a part of the design strategy is to ensure the design is relatable with the surrounding users (whether from the old part of the neighbourhood or the new town) by the proposed programs. Placing a suitable social activities in the space will not only attract people to enter into the residue space but it could also engage social interaction between residents and provide meaningful activities for the users from both neighbourhoods.

PHYSICAL CONNECTION

Establishing a physical connection is more than proposing pathways to promote circulation between the two sides. Not only should the design allow pedestrian movement across the two areas but it should also create a visual connection that unites the immediate surroundings. The design should create harmony with adjacent buildings, the infrastructure above and with the landscape to the bordering Tung Chau Street, Park. Some of the elements to

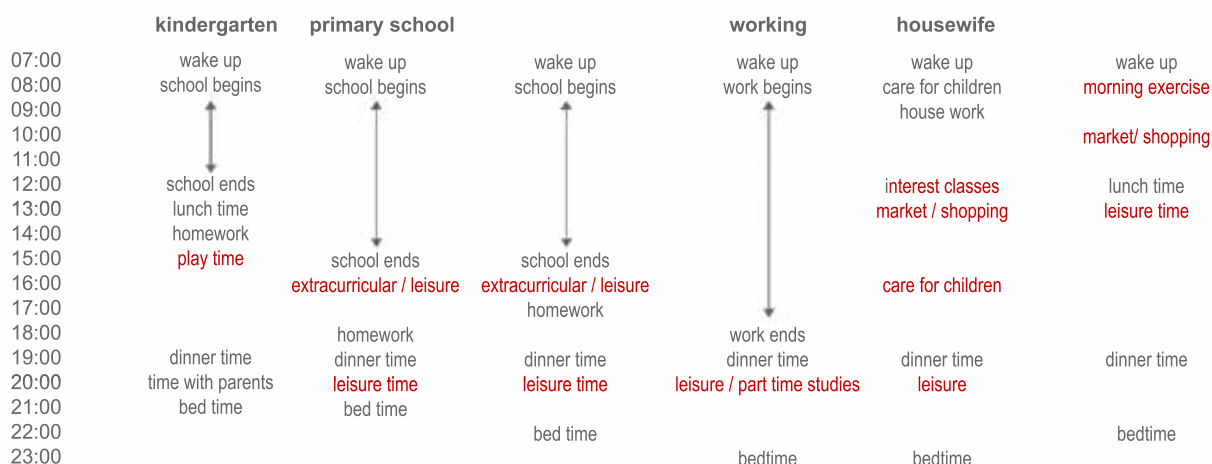
consider for this criteria includes the selection of materials and grid spacing that relates to the two neighbourhoods.

CONNECTING WITH TIME

As one of the city's oldest districts, Sham Shui Po is very rich in its history. The district was once the edge of two political powers. It was also an important commercial hub in the city because of its geographic advantage of being by the water edge. Today, the neighbourhood expanded its landmass by landfill and relocated its shore line. An elevated highway now runs in the middle of the community. The development and transformation of the neighbourhood has become a part of the identity of this area. It is important that the design can reflect this trait. The proposed intervention should connect to the history of the neighbourhood and at the same time harmonize with the present.

This criteria should be satisfied by using the architectural form to represent the different stories and multiple identities of the community. Drawing connection to the historical Ferry Pier, displaying the

majestic transportation infrastructure elevated above the site, as well as representing the proposed future of the community. This can be achieved by using materials and form to represent the different ideas that relates to the past, present and future of Sham Shui Po.



PROGRAM AREA

program sub-total:	4040m ²
total area:	5250m ²
+ 30% service & circulation	

RECREATIONAL

program	area (m ²)
Multi-Purpose Gym	440
Equipment Storage	80
Fitness / Weights	100
Dance / Yoga Studios	300
Change Rooms	150
Games Room	60
Children's Play Area	120
Resting Lounge	120

OTHERS

program	area (m ²)
Reception & Lobby	75
Admin. Office	50

SERVICES

program	area (m ²)
social worker office	100
legal advisory	50
computer/resource centre	150
classrooms	160

COMMUNAL

program	area (m ²)
community kitchen	50
dining hall	180
exhibition spaces	240

COMMERCIAL

program	area (m ²)
Cafe	45
Convenience Store	120
Indoor Market	800
Street Vendors	700

Figure 6.02:

Typical day for the residents in the neighbourhood by age and occupational group. to determine the program requirements needed for the community centre being proposed as an addition to the existing Tung Chau Street Park.

6.2 Program Requirements

When determining the project type and program requirements, it is necessary to be user focused to narrow down the proposal. The residents of both sides of the neighbourhood are equally important to the over all community. The older parts of Sham Shui Po are made up of mostly elders and middle age single men. In the newer part of the community, it is mostly made up of families with school age children. These are all potential users of the facility being proposed. A building type that can include and used by most residents is a community centre.

Based on the activities and the needs of the residents, the program types are generated. (Fig 6.02) The community center is to include several indoor sports programming such as a gymnasium, fitness center, dance studios and change rooms for the use of the proposed facilities and for existing outdoor programs in the park as well. The site is located adjacent to a large park with outdoor sports programming which makes the site ideal to act as an addition to the park that focuses on indoor programming.

Aside from programs that related to sports, other proposed programs include classrooms and meeting rooms for community gathering. Resource centre and computer lab to allow students and unemployed individuals to access resources in print and electronically. The community center should also provide a small food service facility such as a cafe to further provide a space for residents to gather and exchange socially.

6.3 Site Analysis

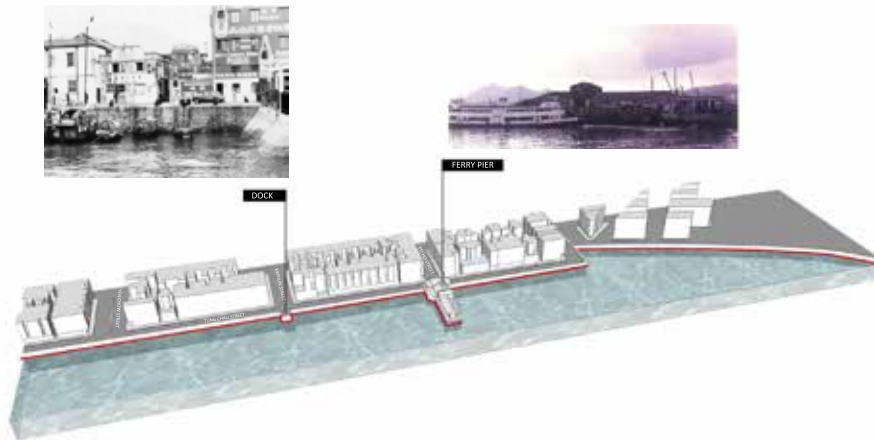
The neighbourhood has a rich history as mentioned in earlier chapters. The community was closed to the water edge when it was first developed. The Ferry Pier was in use until 1976 (Fig 6.01). The Pier was the center of the community and the neighbourhood was even named after its close relationship with the water. Sham Shui Po and water are closely related. Water suggest movement and transportation.

In 1977 the government decided to reclaim the water front for a public housing development. Hong Kong a very densely populated city over a small land mass is inevitable to land fill for more developable land. (Fig 6.03a) The land fill project took 10 years to complete. The West Kowloon Corridor replaced the iconic Ferry Pier as the new mode of transportation. Marking the beginning of a new era. In the past, water represents movement and further represents transportation and commerce. Water allowed goods to flow between the peninsula and the main island and allowed people to travel to neighbouring islands.

Today, this concept are replaced by an elevated freeway above the site. (Fig 6.03b) However, the significance of water cannot be replaced as the neighbourhood's core identity.

Nam Cheong Estate a public housing project was built over the land fill. It introduces a new type of residential building in the community - tall towers equipped with elevators arranged in a larger block. (Fig 6.04) This is different from the traditional building types in the old Sham Shui Po. A large park with various outdoor recreational activities is built next to the elevated corridor. (Fig 6.05) However the planners fail to use the land beneath the freeway in the original plan. Hence, this stripe of left over space forever separates the new and old parts of Sham Shui Po into two halves.

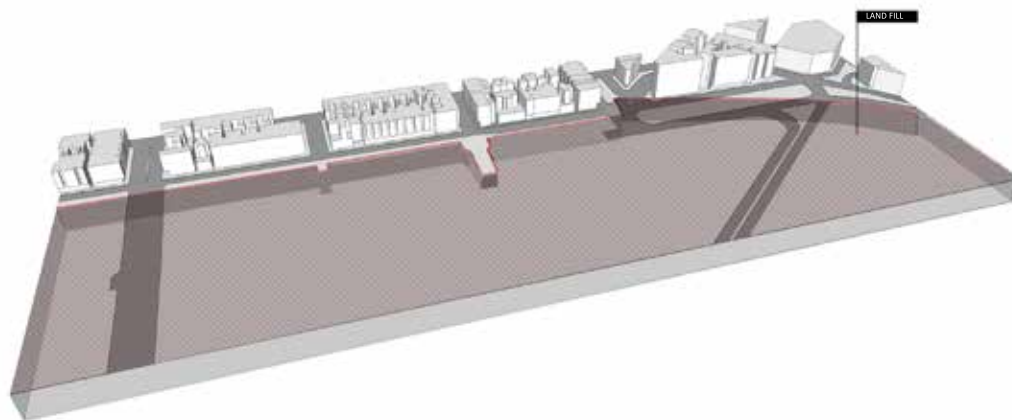
In 2003, a private residential development was built next to the park. (Fig 6.06) The skyline of Sham Shui Po are continuously changing with the advance of the rest of the city.



1924 - 1976

Figure 6.01

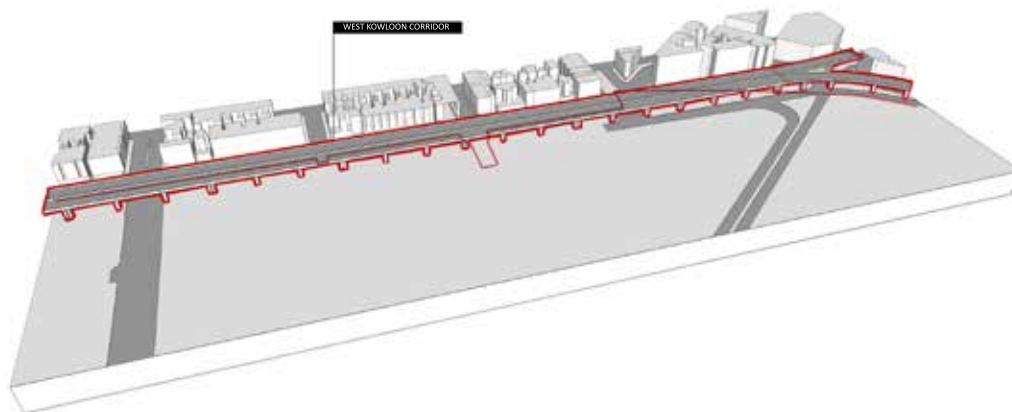
Historical Ferry Pier and Water Front of Sham Shui Po



1977

Figure 6.03a

Land fill project for public housing in the community



1987

Figure 6.03b

West Kowloon Corridor constructed and represents the new mode of transportation.

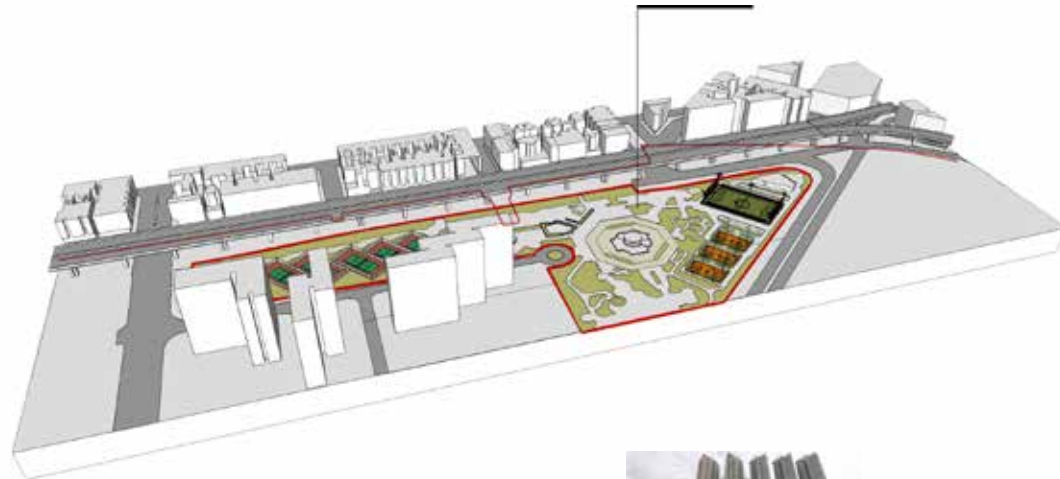


NAM CHEONG ESTATE



1988

Figure 6.04
Nam Cheong Estate, public housing developmet was built on the land fill

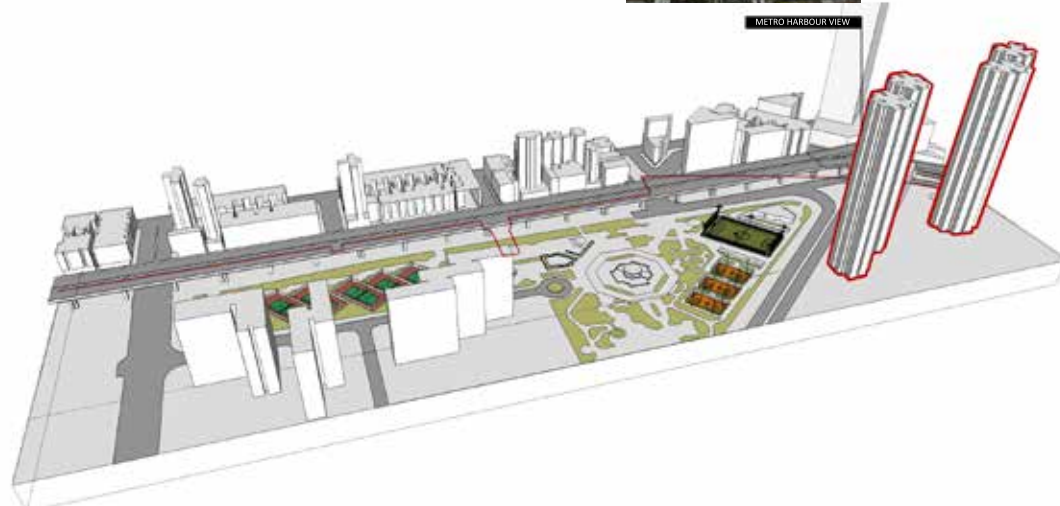


1990

Figure 6.05
Tung Chau Street Park was constructed for the use for the entire communiy, but it is blocked from the north side by the highway



METRO HARBOUR VIEW



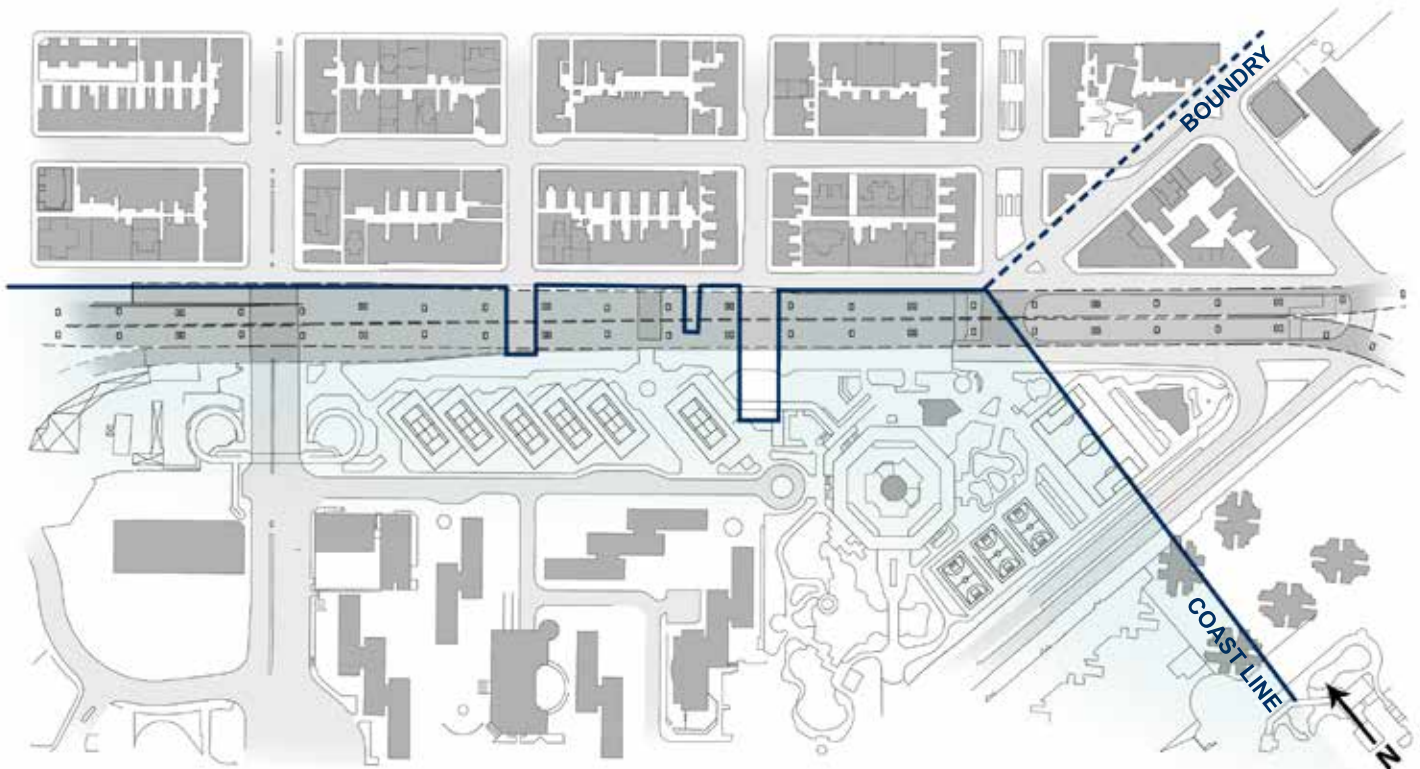
2003

Figure 7.5
New residential towers a continusously being built in the newer parts of the community.

Plans for the older Sham Shui Po includes major neighbourhood revitalization as the buildings North of the highway are over 70 years old. However, there are no formal plans for the community at the moment.

Sham Shui Po is an important neighbourhood in Hong Kong. It contributes to the commerce of the city and the advancement of Hong Kong as an international metropolitan city.

Water was the old way of transportation and today, the highway replaces it. However the highway also introduce a new problem of non-movement at the pedestrian level. The follwoing site analysis diagrams further suggest the non-movement present today. Especially when the two parts of the neighbourhood are oriented in a different planning pattern. (Fig 6.08)



HISTORICAL LINES

Figure 6.07:

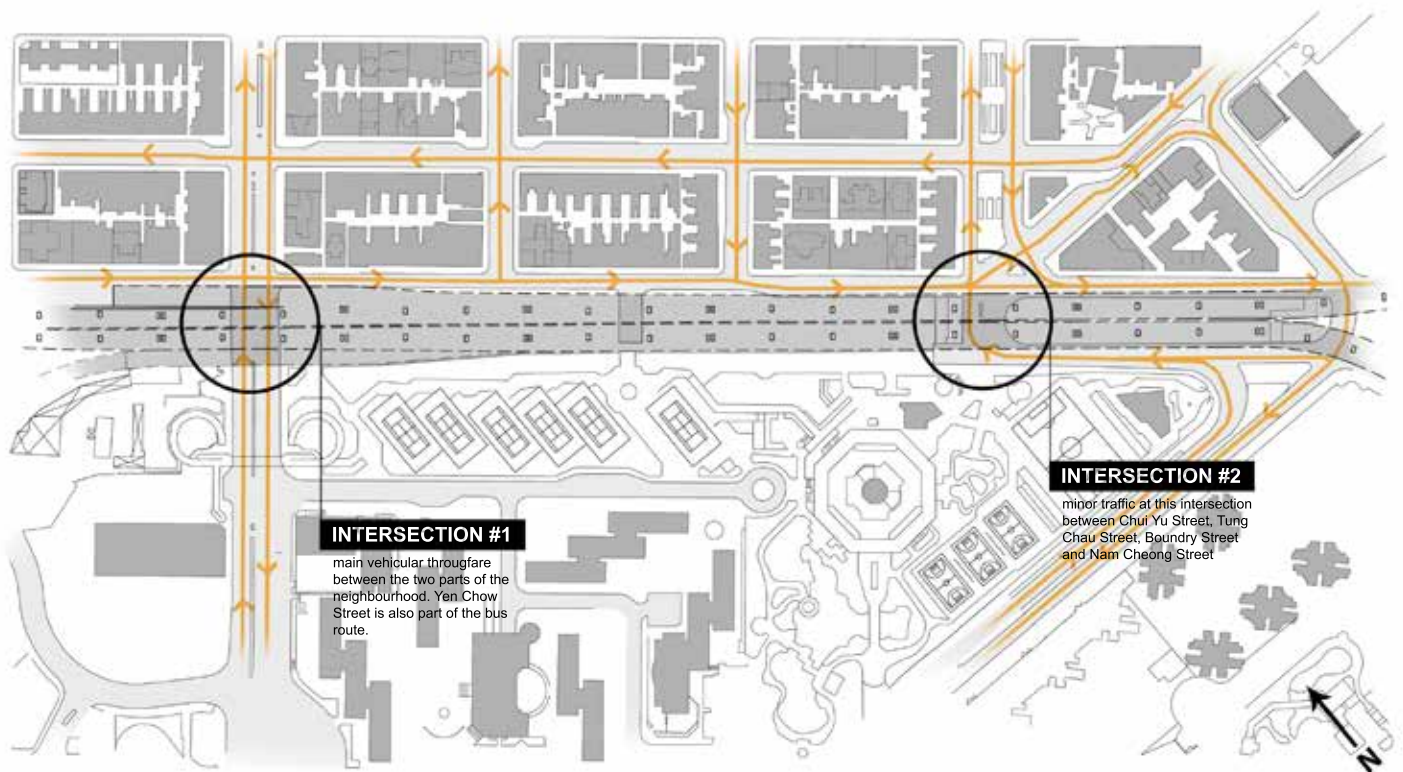
The original coast line was located at where the West Kowloon Corridor is situated today. The The Ferry Pier was the most significant part of the neighbourhood. The site for the thesis proposal will take place at the old docks.



FABRIC STUDY

Figure 6.08:

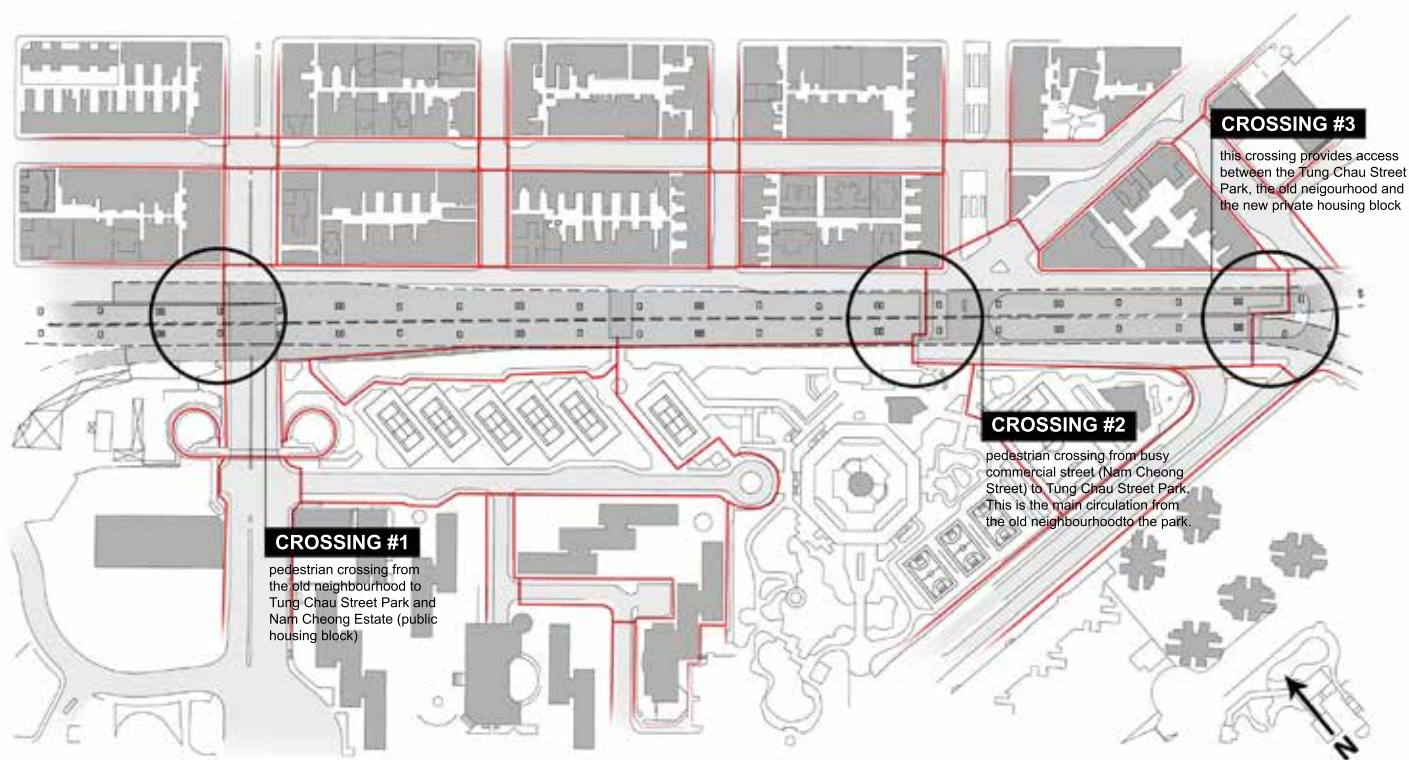
The original coast line was located at where the West Kowloon Corridor is situated today. The The Ferry Pier was the most significant part of the neighbourhood. The site for the thesis proposal will take place at the old docks.



VEHICULAR TRAFFIC

Figure 5.09:

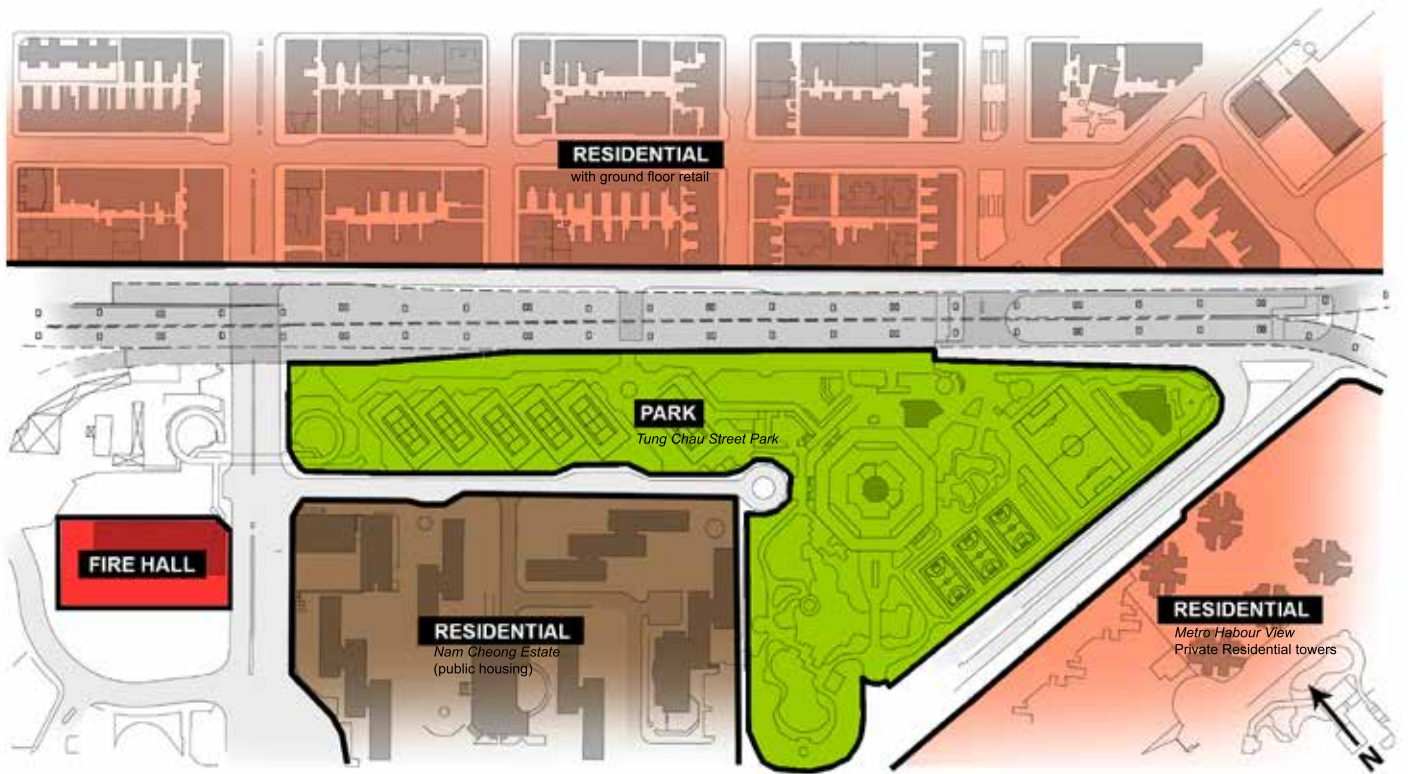
Most of the vehicular roads in this area are one way streets. This makes traveling by car in Sham Shui Po difficult. There are only two locations as indicated that the old and the new part of the neighbourhood connects by car. Vehicular traffic is heavier at Intersection #1 than Intersection #2.



PEDESTRIAN TRAFFIC

Figure 6.10:

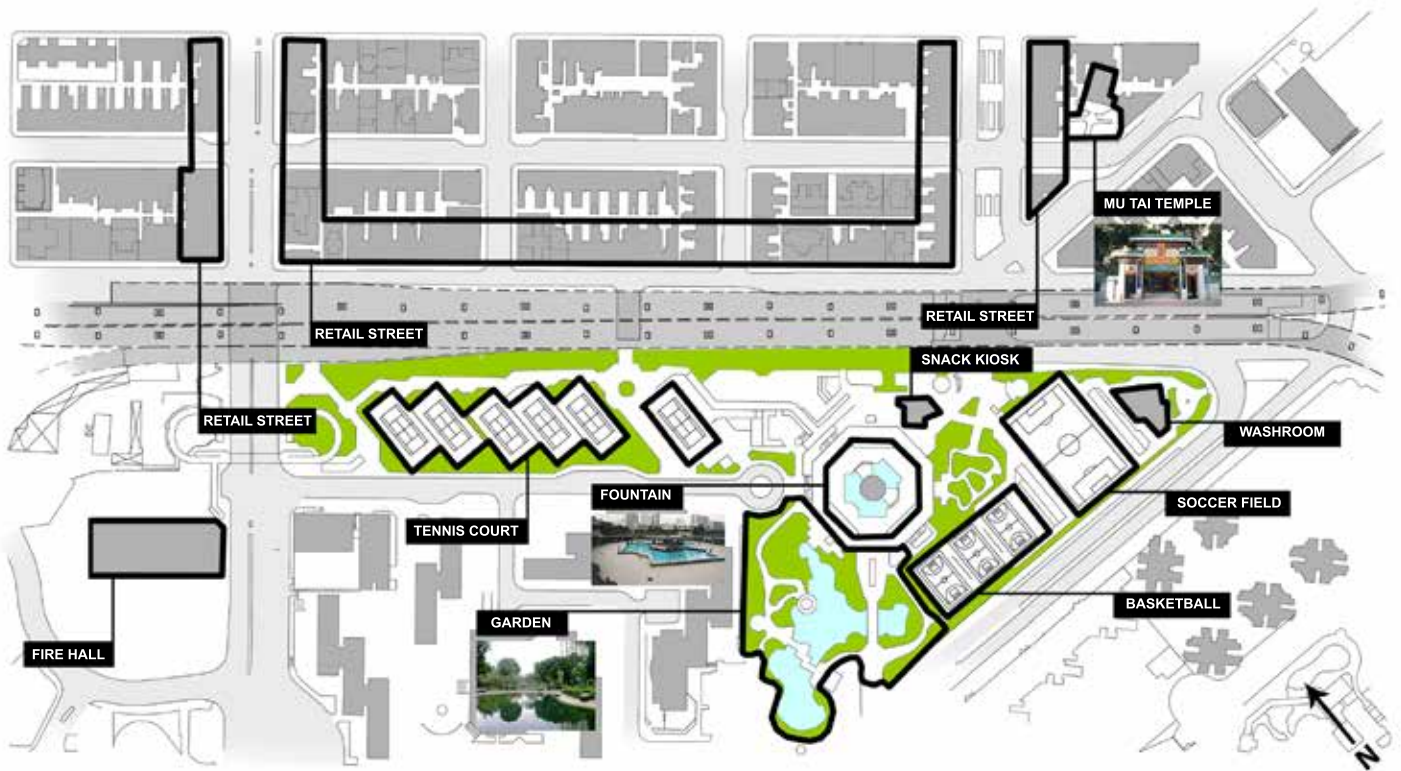
Pedestrian Circulation at the location as indicated on the map.



LAND USE

Figure 6.11

Land use study of the area. The park is surrounded by residential buildings of various type that houses different demographics and it represents different people and users of the community.



SIGNIFICANT PROGRAMS

Figure 6.12

Significant features in the existing park. The programs are mostly outdoor facilities. It makes an opportunity for indoor facilities for the new proposal.

CHAPTER SEVEN

AN INTERVENTION

7.1 Design Approach

If the influences from both sides can be connected in the lost space, the result will be an exchange of the influences from the old and the new community. (Fig. 7.13)

An architectural intervention for the lost space is not about proposing what program to be placed on this site, but rather focused on establish a connection with either side of the void to reconnect it to the rest of the fabric again.

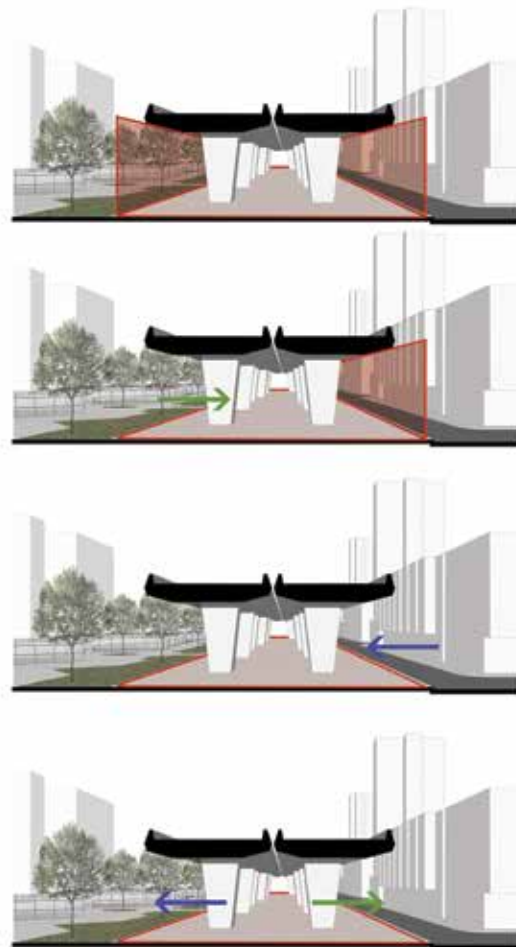


Figure 7.13

To address the void space, the design should be influenced from both sides rather than a single side to establish a connection. If the design can not reflect the two sides, it is merely an extension of a single edge, not blurring the boundaries, allow the two sides to permeate across the site.

ARCHITECTURE:

IS NOT

PROGRAMS

ARCHITECTURE

IN LOST SPACE:

IS RE-CONNECTIONS

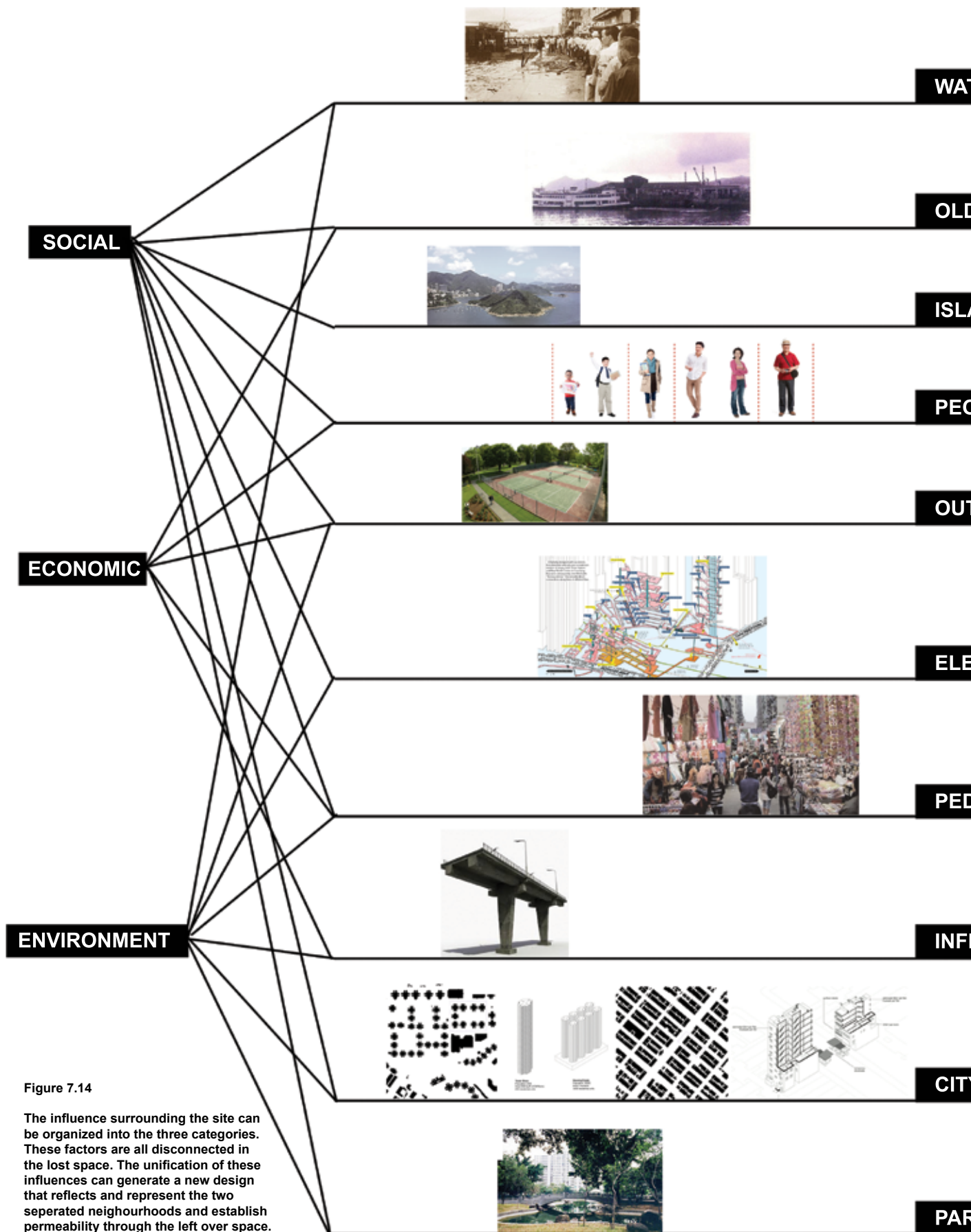


Figure 7.14

The influence surrounding the site can be organized into the three categories. These factors are all disconnected in the lost space. The unification of these influences can generate a new design that reflects and represent the two seperated neighbourhoods and establish permeability through the left over space.

WATERFRONT

DOCK PIER

LANDS

PEOPLE

OUTDOOR RECREATION

ELEVATIONS

PEDESTRIAN STREET

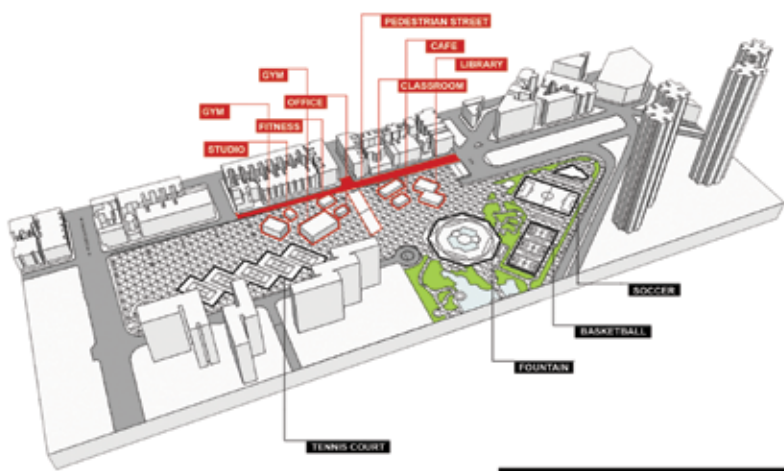
INFRASTRUCTURE

WEAVE FABRIC

WORK



GRID + ENTRY



PROGRAMS + PLACEMENT



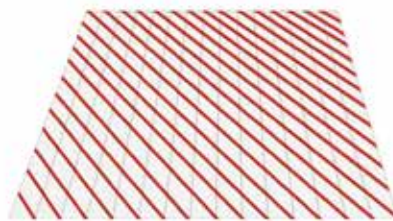
MATERIALIZE



The rediscovery of residual spaces could restore the fragmentation of neighbourhoods through insensitive siting of highway development. The introduction of an architectural intervention can help realize the opportunities available to the residual space that response by the needs of the surrounding users.



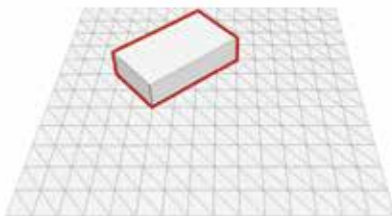
1950'S GRID



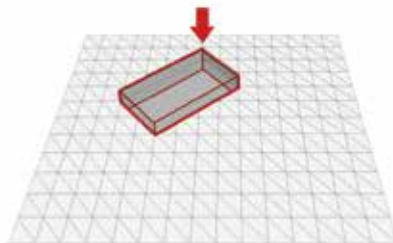
1990'S GRID



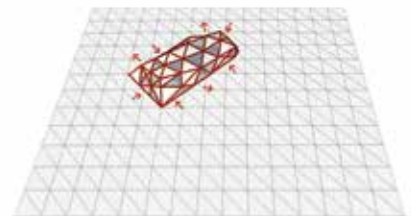
NEW GRID



PLACEMENT



SUNKEN



APPLY GRID

To address the lost space is to find the social, economic and environmental connections that have been forgotten in the void. The void exists because the introduction of the highway infrastructure fail to connect with the rest of the fabric. To reestablish the connection, one must layer the influences found in the surrounding space and derive a connection between the main driving forces (social relevance, physical connection). The objective is to realign the social, economic, political and environmental factors present in the community and represent it in the void space. The social refers to the history, the culture, and the residents of the adjacent neighbourhoods and the overall city. The historical reference to the old waterfront, the old pier are part of the collective memories of the citizens in this neighbourhood. People in Hong Kong takes the ferry to neighbouring islands for leisure, in reference to the local culture, the displacement of programs are scattered across the new grid to reflect that particular cultural activity. (Fig 7.14) The grid generated on the site is also a reflection of the two distinctly different fabric surrounding the site. The patterns found on both sides are extended across the site as a way to guide the placement of the island like programs.

The starting point of the design is the location of the old pier and the shoreline. This indicates the center of the design just as the pier was once the center of the community. Tung Chau Street was once the center of the economic activities in the neighbourhood. As a street along the water's edge it was a popular retail streetfront. The design proposed to recall the busy street markets by encouraging more pedestrian circulation by the extended pavement. The grid extends beyond the park on to the vehicular road. The outline of the pier is deeply craved into the site to reflect the footprint of it as well as outlining another important influence from the city. Changing in elevation in Hong Kong is not unfamiliar to her citizens as residents often go up and down into the subway, underground pathways or even skywalks. The city was also named "city with no grounds" because of the enormous network of underground and above ground infrastructure. To reflect this unique characteristic of Hong Kong, a skybridge is also introduced to cross over Tung Chau Street from Gullin Street to the Park. The sports facility changing levels also reflect this quality unique to the city.

Figure 7.15

Form finding strategies are based on the surrounding context, connecting with the collective memories, history and culture of the Sham Shu Po neighbourhood and the overall city of Hong Kong

Programs are scattered across the open field, organized by a new composed grid based on surrounding influences. To the west of the buried walkway across the site is the recreational center which houses various sports activities. Programs such as the gymnasium which requires more height room are sunken into the ground. The roof structure above the building merges with the ground plane with the rest of the park. The park is also redesigned to better align with the new grid by incorporating a new flooring pattern. The grid extends beyond the park and the residues space into the vehicular road and the elevation of selected buildings. The vacant buildings along Tong Chau Street as a leftover space also possess tremendous amount of potential to house other programs to service the community. West of the recreational center is the proposed café. The café is allocated in the residual territory as a place holder to indicate the potential of commercial activities in the leftover space. More commercial opportunities can develop along the underbelly of the highway in the future. Other opportunities such introducing a resource center is also a possible program to include in this space.



Figure 7.16

Proposed site plan. The left side of the plan suggest the programs sunken underground because of the height it requires. To the right side of the plan are programs that are on the ground floor that fits between the the ground plane and the underbelly of the freeway.



Figure 7.29

Aerial view of the site. The scattered programs are like islands in the open field. The roof flows into the ground plane and extends onto the street to blur the boundary of the invisible barrier caused by the elevated highway.

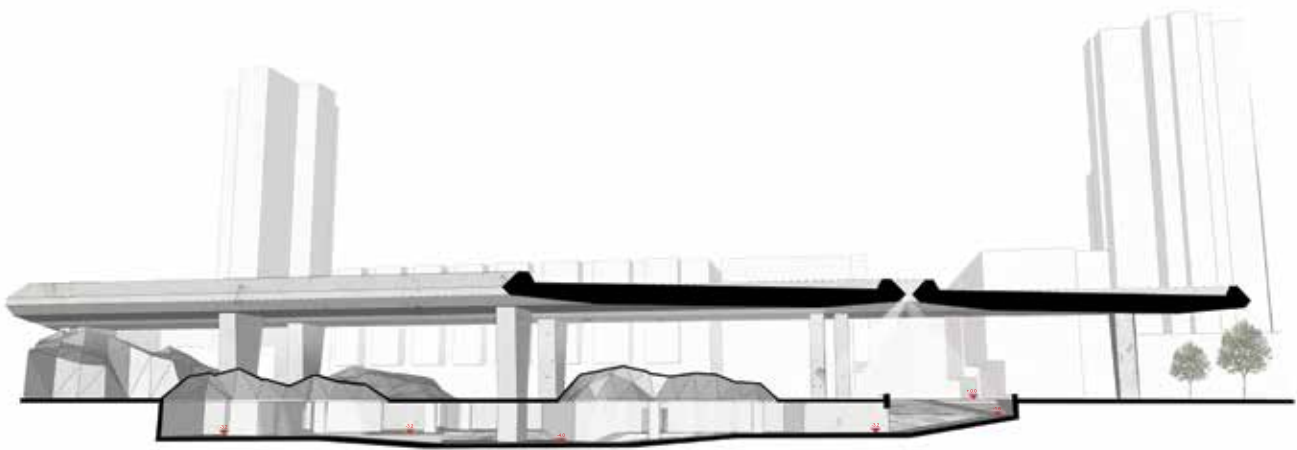
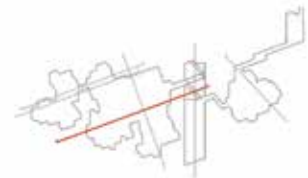


Figure 7.18

Section view across the building.
The level continue to change as
one walk throught the building.



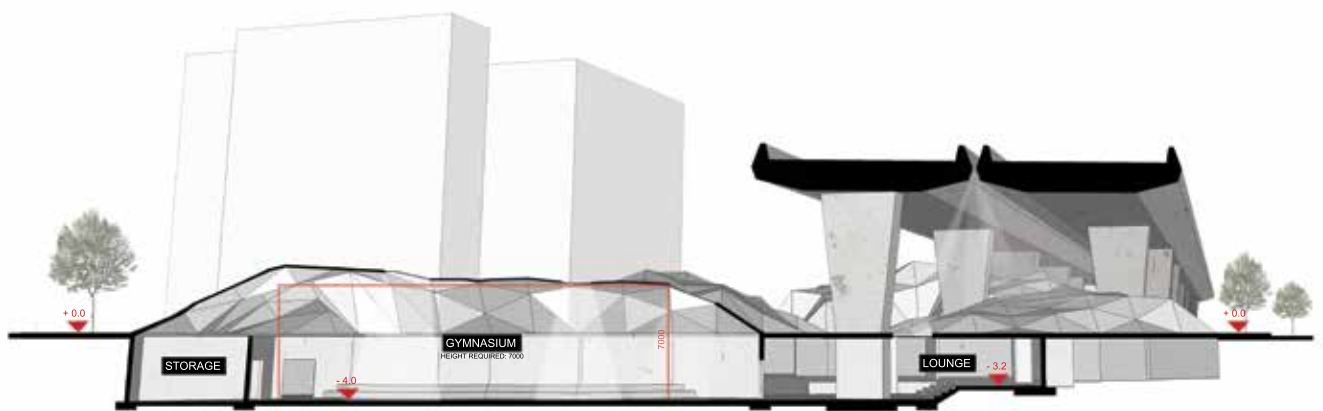
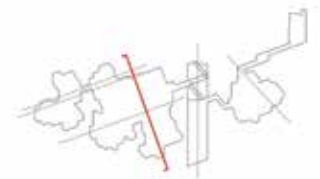
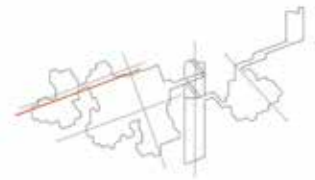
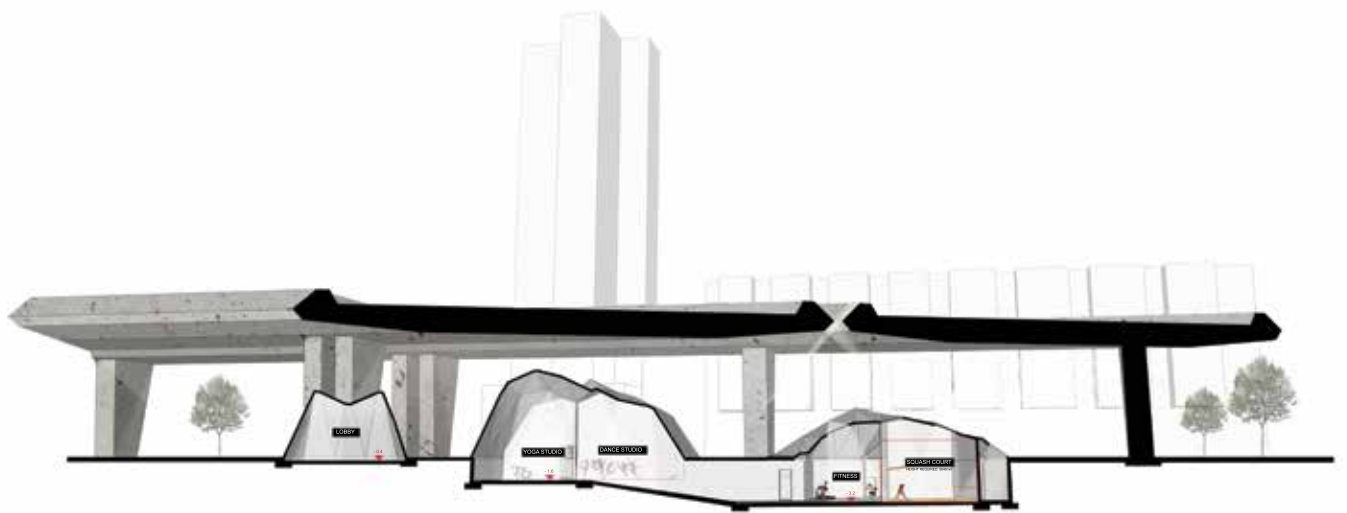


Figure 7.19

Section cut showing Gymnasium.
The roof strcture flows into the
ground plane as one continous
landscape.







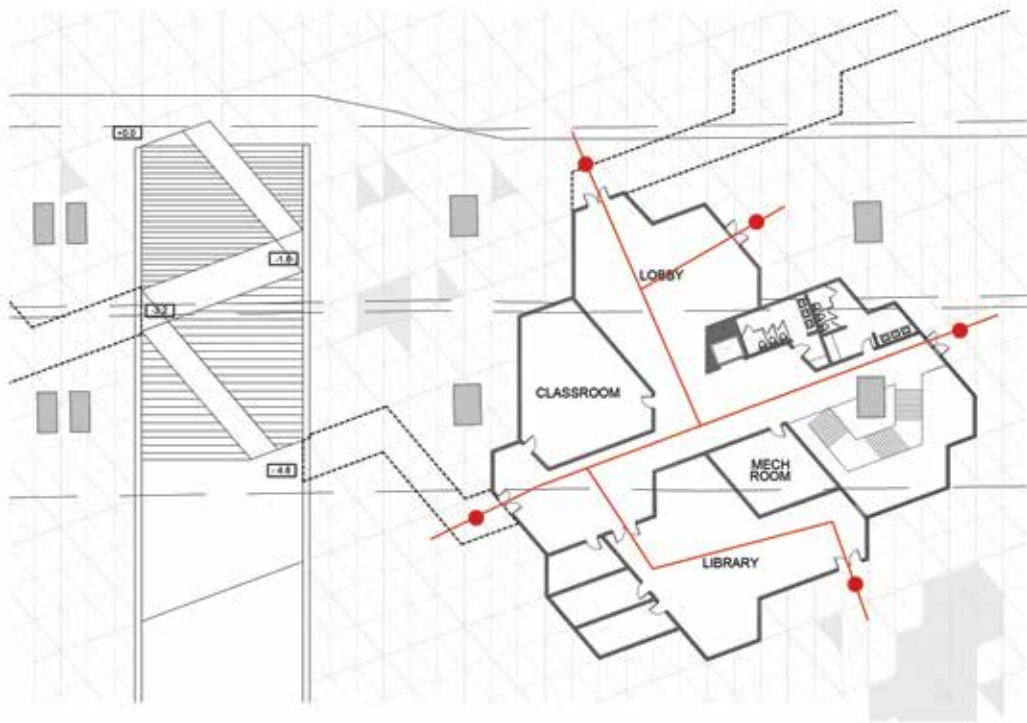
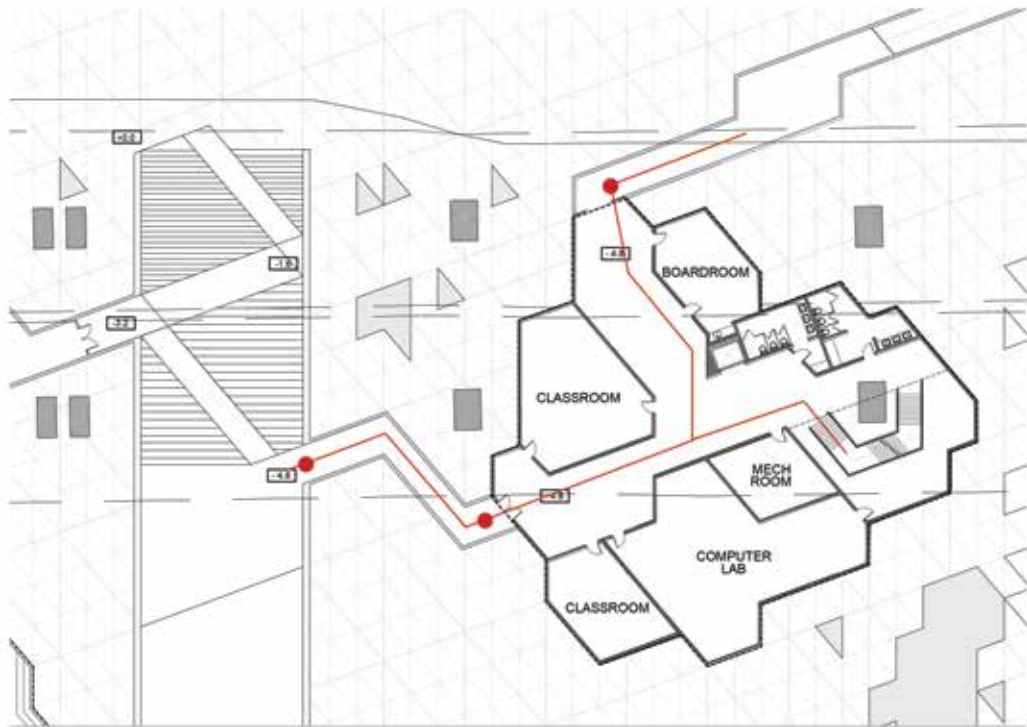


Figure 7.22
Figure 7.23

Resource Center Floorplan,
showing entry from underground
and on the ground plane. The two
levels in this building contains
computer labs and classroom for
the community to use.



Figure 7.24

Resource Center Section. The column of the elevated highway extends into the architecture of the resource center.

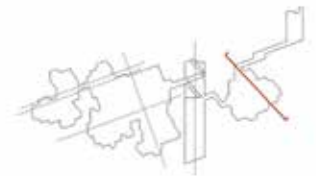




Figure 7.25

Cafe Perspective

Figure 7.26

Cafe floorplan. The cafe is an example of one possible commercial activity for the residual space.



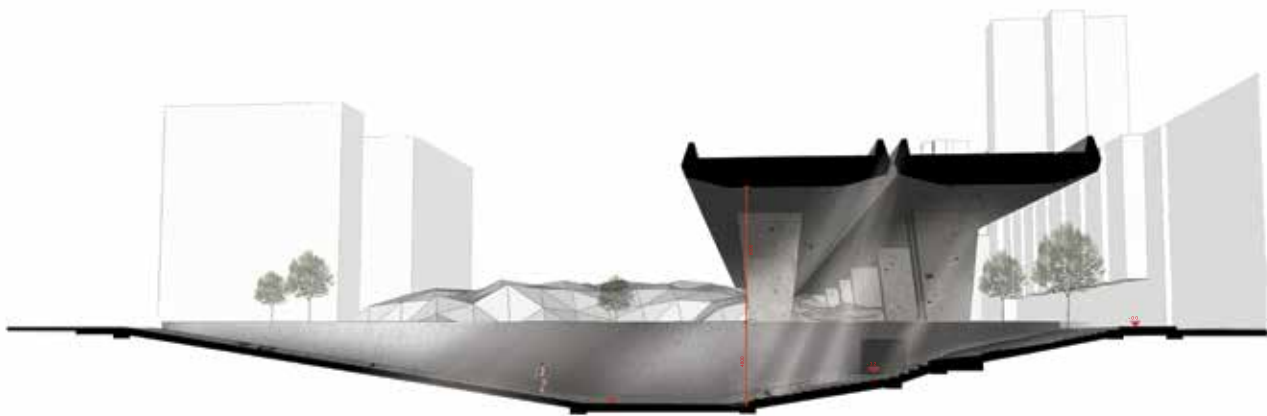
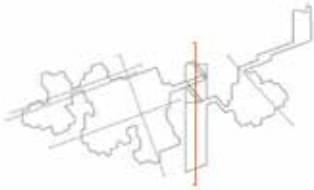


Figure 7.28

Section along the cut. The pathway that bridges the two side of the neighbourhood and the foot print of the historical ferry pier.



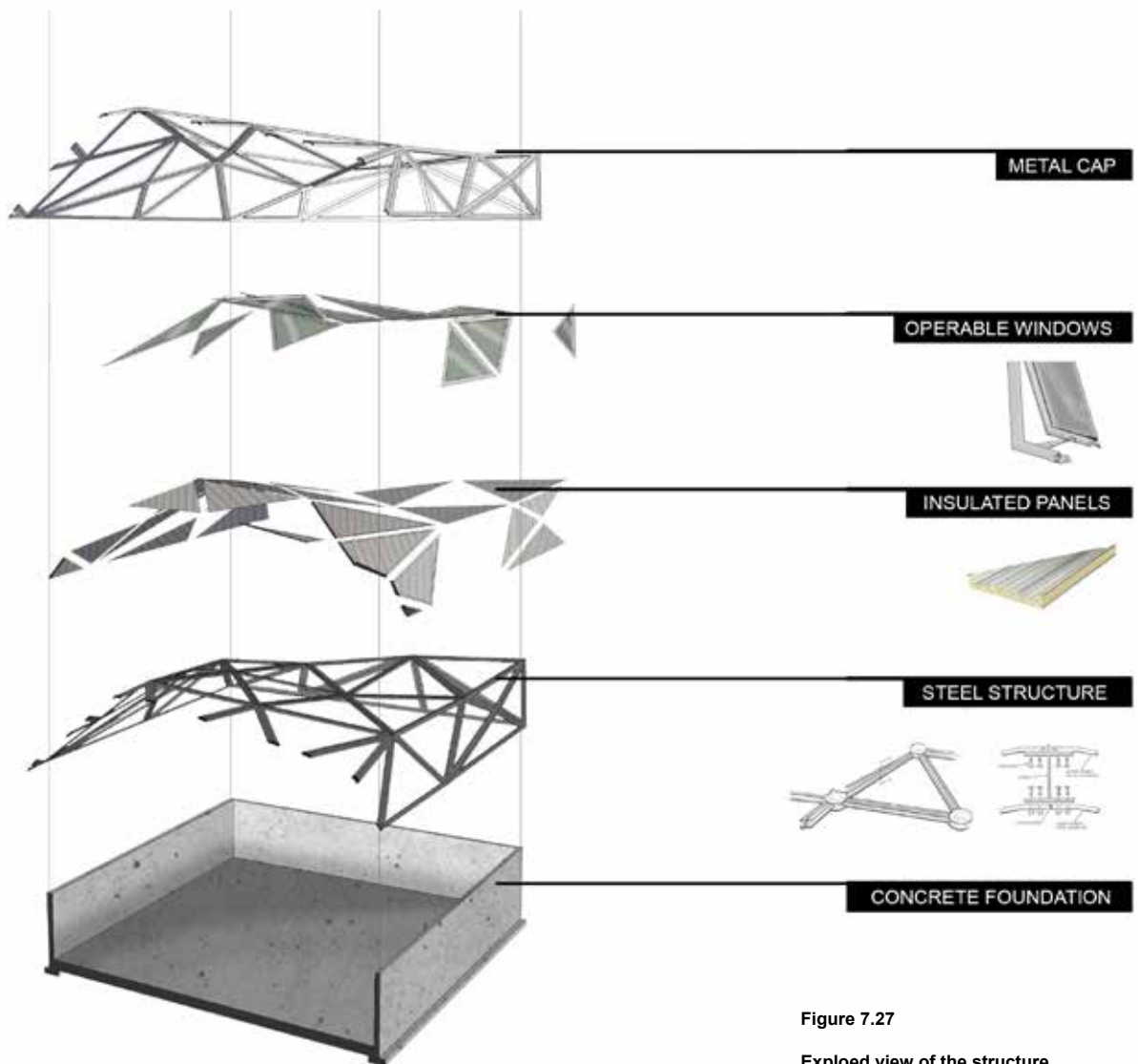


Figure 7.27

Exploded view of the structure

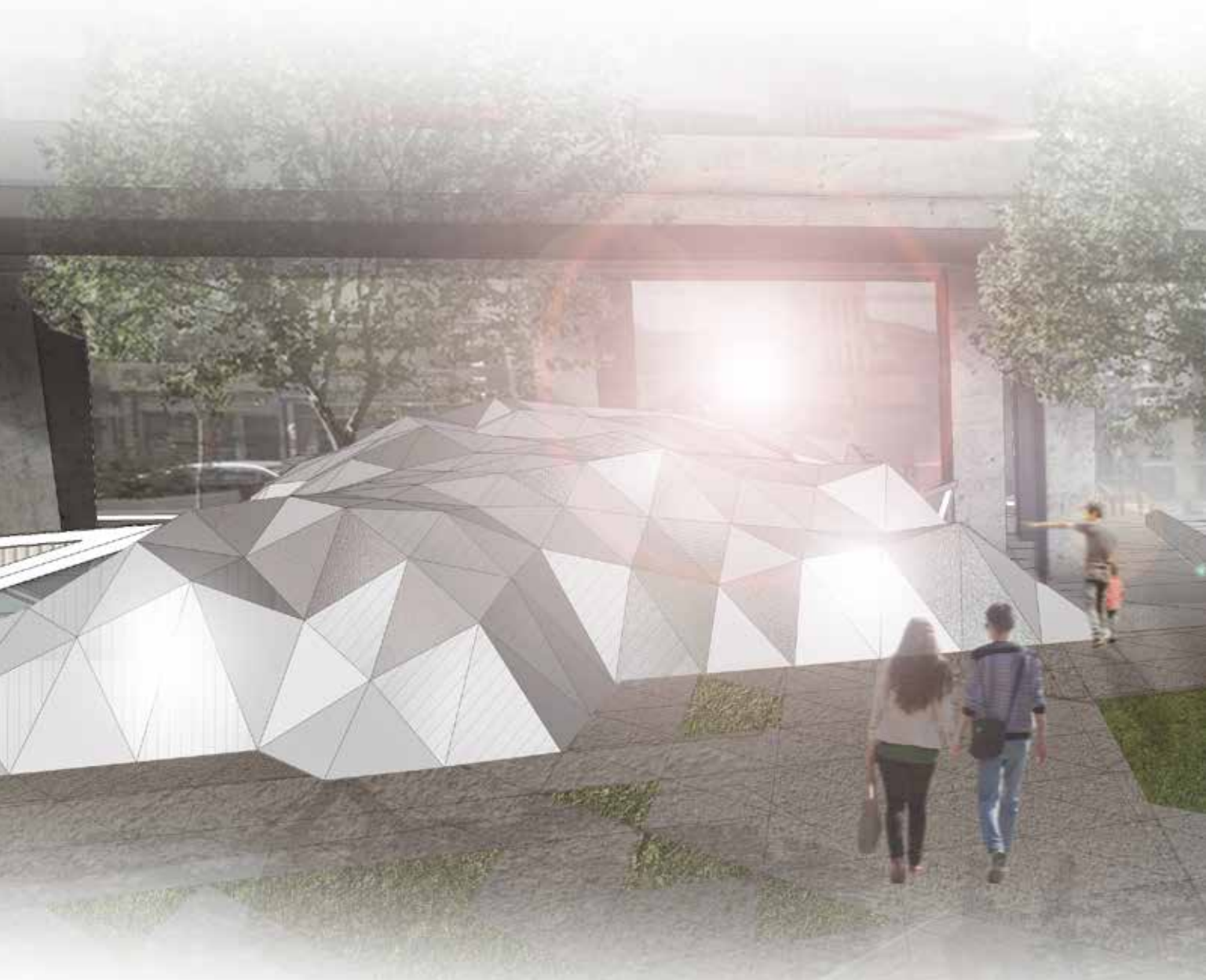




Figure 7.30

View from the new town. The big cut illustrates a connection for the two separated sides and the memories of the historical ferry dock.





Figure 7.31

The pedestrian only street will promote more retail activities along Tung Chau street and the activities will permeate across the site to the park side

APPENDIX

PAST DESIGNS

DESIGN ATTEMPT #1

Conventional community centers in Hong Kong are built vertically (upward) instead of horizontally. For this specific site, the building will naturally run horizontally in the space underneath the elevated highway. This design proposal scatters the programs across the site by the program categories. The programs are grouped into four types. This includes Recreation (which is largely comprise of sports facilities), Commercial (Cafe and Market), Community Services (Resource Center and NGO offices) and Commual Space (Community Kitchen, Dining Hall, Laundry facilities). These programs are to promote social interaction for both sides of the community. (Fig A.01)

The layout of the linear community center is broken up by pedestrian pathways that run across the site in multiple places. (Fig A.02) Resulting the appreance of scattered buildings under the West Kowloon Corridor. The pathways are extention of the existing pedestrian network on either side of the residual space. (Fig A.03) These pathways not only provide circulation but also create vistas through the other side.

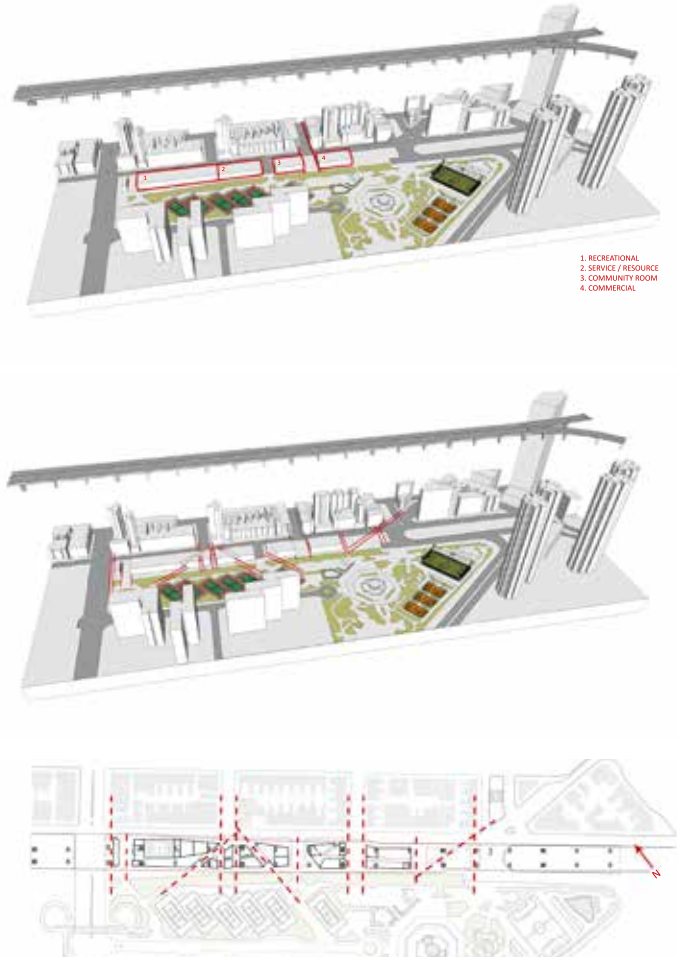


Figure A.01 (TOP)

Programs are grouped into four categories and placed in the site in a linear mannar

Figure A.02 (MIDDLE)

Pathways interrupt the linear solid and allows pedestrian movement through the site from both sides

Figure A.03 (BOTTOM)

The new circulation paths are extendent from the existing network

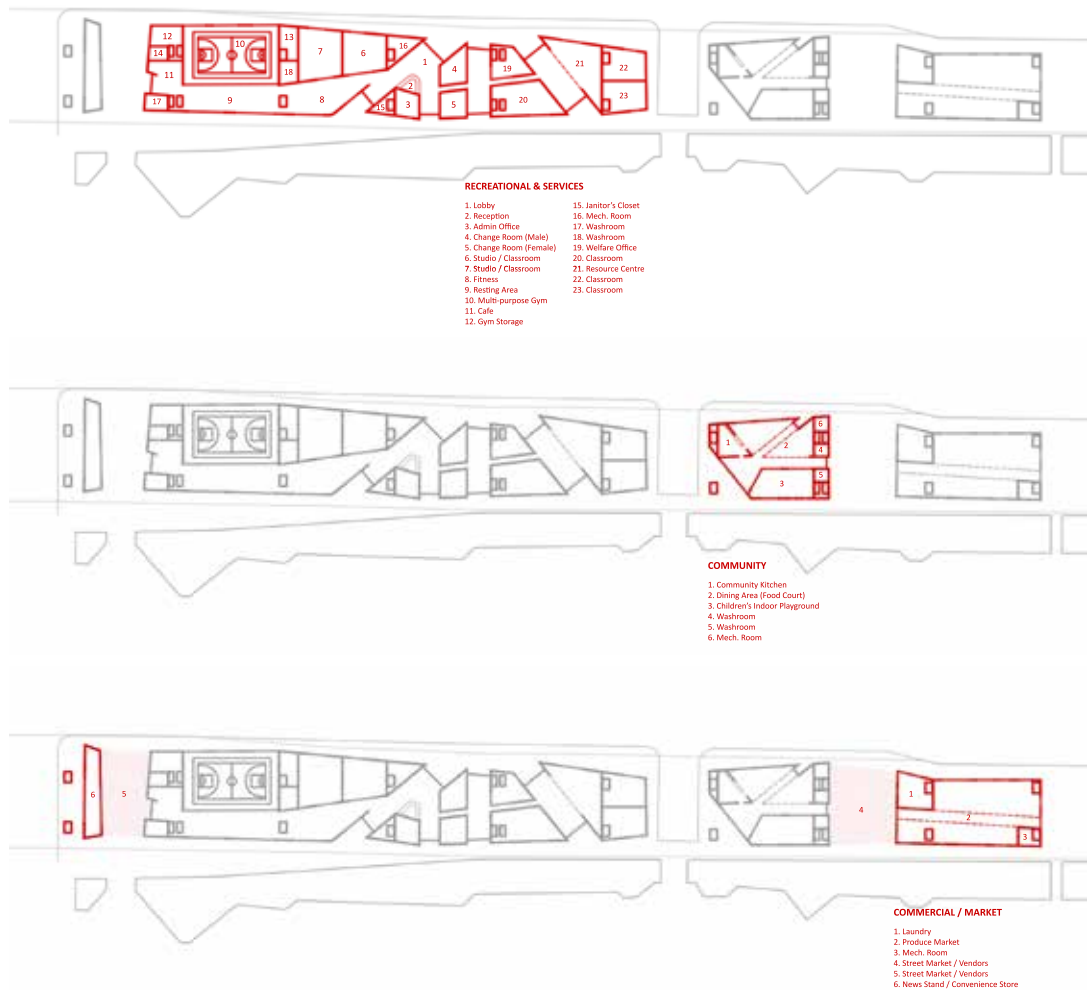


Figure A.04:

Floor plans by types of program which includes (from top to bottom) Recreational, Community Services and Commercial / Market spaces.



Figure A.05:

Street view of the design proposal featuring vista of the Park from Tung Chau Street. The large pathway could also provide opportunities for street vendors.



The wider pathways are intentional which hope to attract informal commercial activities such as street vendors in addition to the proposed market space. (Fig A.05) (Fig A.06) The informality adds to the uniqueness and can be identify with the culture of Hong Kong at large, especially for the older districts in the city.

The materials selected for the design are concrete and glass. Concrete relates to the structural column that supports the highway, and the transparency of

the glass allows pedestrian on both sides to see the activities that are happening inside the building as well as to look beyond the building into the park or Tung Chau Street. (Fig A.07) Large glass facade also allow large quantity of sunlight to penetrate into the naturally dark underbelly of the highway. The pairing of the concrete and glass contrast from one another .

Review

In the first design attempt, the intervention focused to take place beneath the infrastructure. The design was only restricted to the site boundaries. However as discussed in previous chapters, designing the residual space should “think outside the box”, using creativity in oppose to conventional mindset that the intervention should only fall in between the ground plane and the elevated structured. After a closer reading of the neighbourhood, the proposal may be more successful if it extends into the park. Therefore the residual space can be integrated into the larger park system.

The design might have included the first two criterias as listed earlier in this chapter but the proposal overall fail to fully integrate all the criterias together. Even though, the design was intended to establish a visual connection of the two sides by creating vistas but the liner building act as a bar that may discourage movement between the two sides. (Fig A.08 Tthe project fails to resolve the noise and air pollution caused by the highway above.

In addition, the design lacks the connection with the community's past and idenity. The design is not site specific enough and could be displace in any leftover space underneath an elevated road way. The next design attempt should be able to relate and represent both sides of the community.



Figure A.05

The concrete walls resembles the concrete columns from the elevated highway. However the solidity of the concrete exterior may discourage pedestrian movement and it blocks visual connection to the other side.

Figure A.06

Wide pathways frames the other side of the street, creating a vista, a gateway to connection the two sides.

Figure A.07

The transparency of the glass allows the users of the building to feel a part of the street and vice versa. In addition, it promotes the program within the building that encourage and invite people in to take part in the activities. However, glass may not be a good material choice for a gymnasium

Figure A.08

The linear building may discourage pedestrian movement between the two sides of the. More North - South connection is needed to establish a stronger pedestrian network across the two parts of the neighbourhood.



DESIGN ATTEMPT #2

Based on the revisions from the first design attempt, the second design proposal tries to make a stronger connection with the identity of the city. To represent this neighbourhood, the design draws inspiration from its past and further analysis the development of the district. As mentioned in earlier parts of this thesis report, Sham Shui Po was a major transportation hub in the past, This has to do with its geographic location of being at the water's edge. The community was most famous for the Sham Shui Po Ferry Pier which was located at the current project site. The Ferry Pier once provided services from Sham Shui Po to Central in Hong Kong Island as well as Macau. It was a major port to connect the Kowloon Peninsula with the rest of Hong Kong and neighbouring islands.

The design of the community center retraces the foot print of the old ferry pier. The programs are placed in center of the building allowing East- West movement around the building. (Fig A.09) This is similar to the old Pier which the circulation wraps around the programs because it allows passengers to board the ship. The advantage of having the circulation on the outside is to encourage residents to walk along-side the community center.

As the historical water front, the new community center also includes water features that extends into the park and beyond the boundaries of the highway above. The materials selected for this building is also mostly inspired from the old pier. (Fig A.10) The revival of the old pier can related to the citizens of this community.

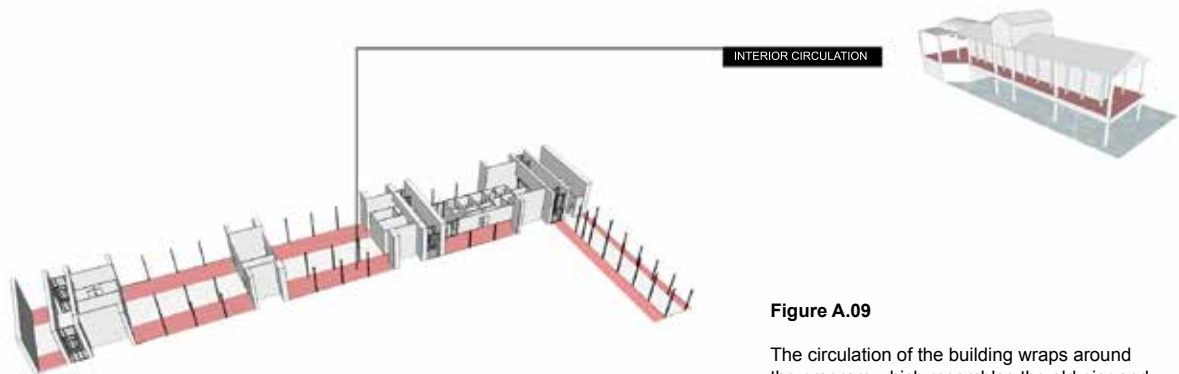


Figure A.09

The circulation of the building wraps around the program which resembles the old pier and provides easy access to residents.

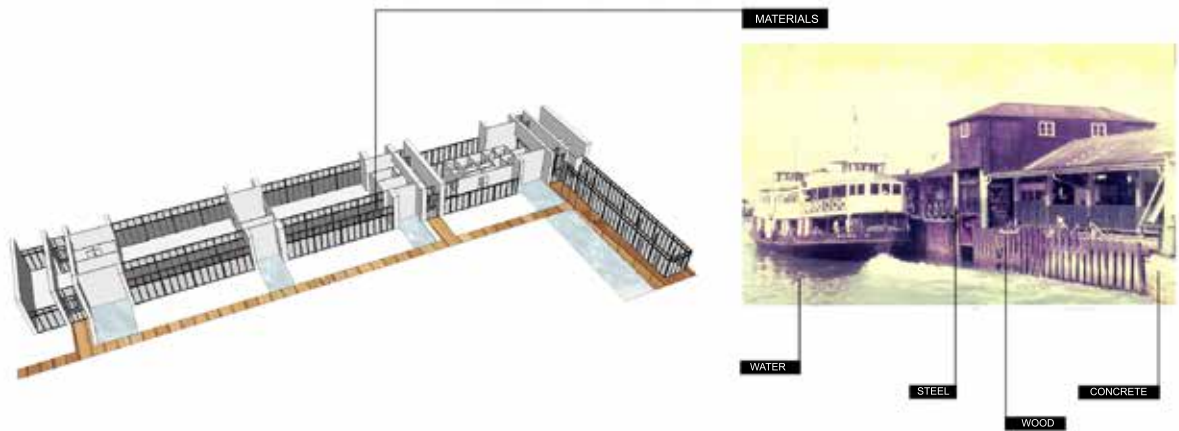
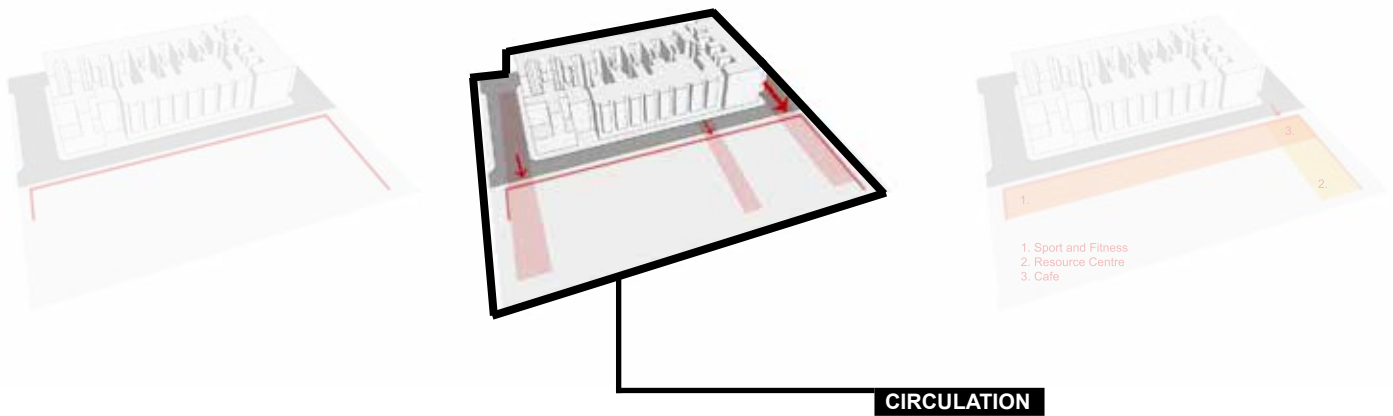


Figure A.10

Materials selection also take inspiration from the old pier. The design now extends into the park and includes water features and pools that relates to the historical waterfront.



The new design also reinforces North - South pedestrian movements. The new proposed circulation paths are extensions of Pei Ho Street on one end and Kwei Lin Street on the other side. These two roads marks the two ends of the building and are the main access into the building.

Secondary circulation as mentioned earlier are East - West corridors that surrounds the programs of the community center. The facade of the community center can be fully open as it is made up of bi-fold doors. The building facade can be fully open and allow pedestrians to enter into the building from all sides. Pedestrains can cross over the building from the proposed path that connects to Pei Ho Street of Kwei Lin Street, and in addition they can walk across the gym from Tung Chau Street Park to Tung Chau

street of vice versa. (Fig A.11)

The changing facade allows the building to fully open, partially open or fully closed depending of the activities happening inside the building. For example, the facade can open up during a drop-in basketball session in the community center, inviting people from either side to join in the game and fullfills the ideal of the design idea of connecting with people in the residual space. Making a leftover and under-use space in a dense city useful and enjoyable for the residents of the urban neighbourhood.

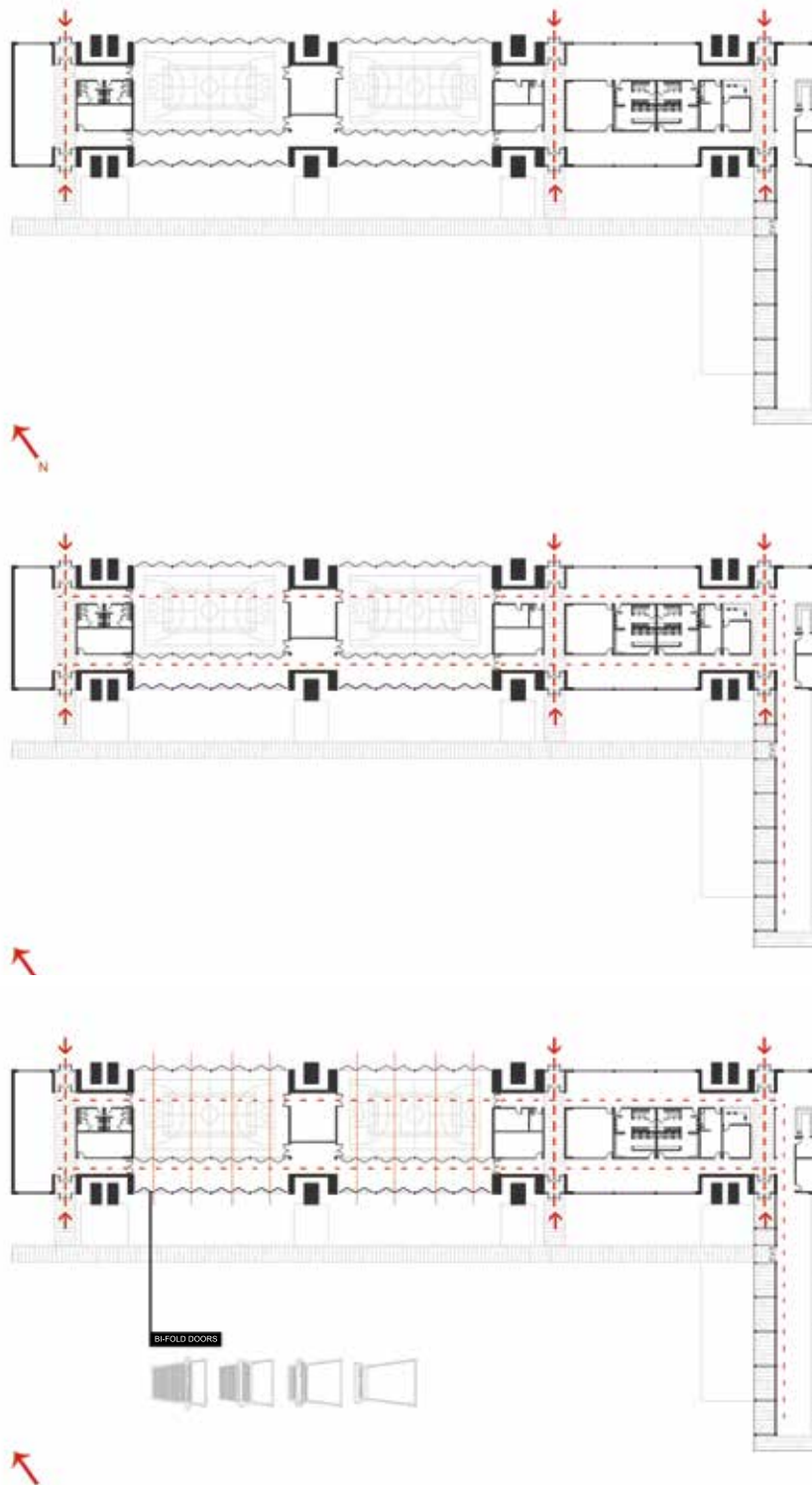


Figure A.11

Indicating the Primary, Secondary circulation proposed in this design. The facade of the building can fully open up and allow pedestrian to walk into the building from any side

Along the facade of the building on either side are bi-fold doors that allows the building to fully open up and invites pedestrains to walk into the building and join in to the activities happening within. The pedestrains can also walk in the interior cooridor instead of on the sidewalk outside as they run parallel to the Tung Chau Street Park and Tung Chau Street. (Fig A.12) The open facade also allow more light to fill the naturally dark interiors.

The configurations of the bi-fold doors can be rearranged based on the activities happening inside the multi-purpose gym. The gym does not only allow sports activities to happen but is also act as a multi functional room that can host exhibitions, temporary markets, community meetings etc. The change-able facade can also closed off either side as needed. (Fig. A.13)

Figure A.12

Rendering shows the facade open up to the park, inviting people to walk inside of the building to join in the programs and activities happening inside or to walk across to the other side of the site.

Figure A.13

Different configuration of the facade can be used for various activities occuring in the multi-purpose gym/ hall



CLOSED HALL



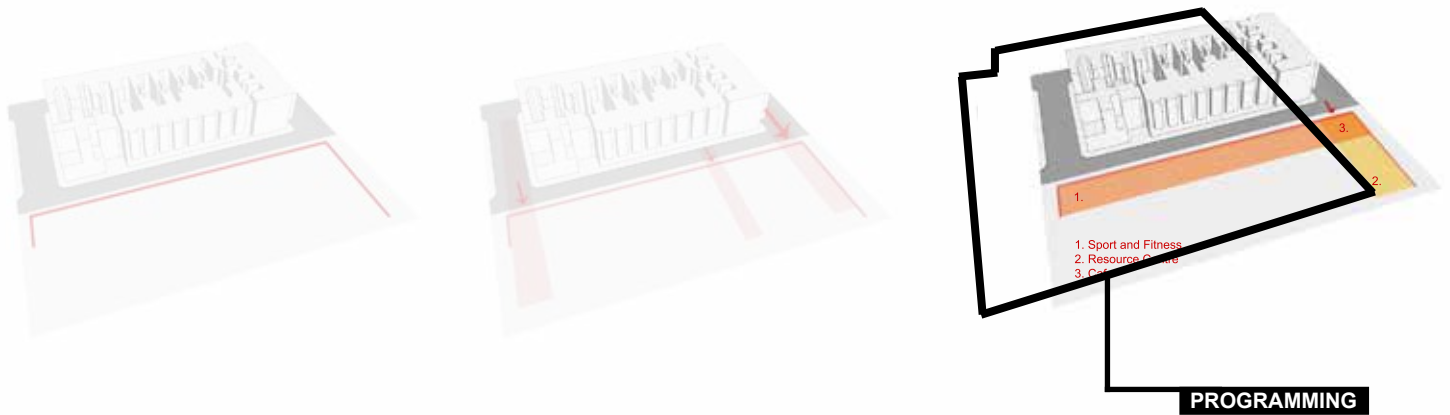
DROP IN PROGRAM



OPEN TO PARK



OPEN TO STREET



The programs for this proposal are divided into 2 main categories. The first group of programs are related to sports and fitness. This includes Dance Studios, Fitness Center (Treadmills and weights), and two school size Gyms (for basketball, badminton etc). These are programs that are related to movement are they are arranged in a linear manner from East to West. The second categories is made up of programs that are not related to movement such as Resource Centre, Community Meeting Room etc. These two groups could almost seperated into the two different buildings. Hence the second category, the programs are arranged in the vertical configuration, running North to South. Programs that overlap such as Reception, Adminstrative offices and a community cafe is placed at the intersection of the two groups.

The overlapping occurs in the North East corner of the building and it marks the main entrance of the building even though there are many access points of this building design. (Fig A.14)

The multi-purpose gym act as more than just a sports facility. Since one space can carry more than just one function, the gym can be used for exhibtions and market space as well when needed.

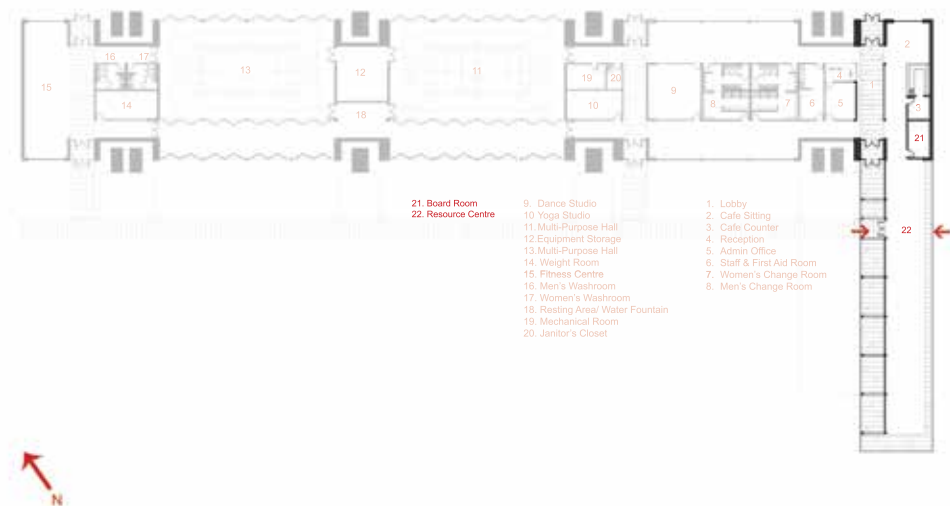
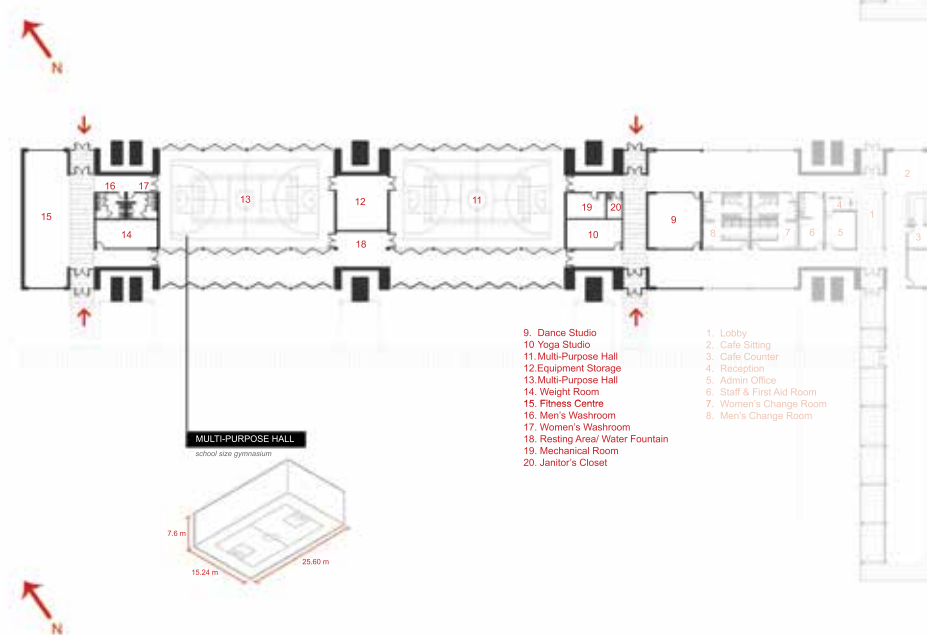
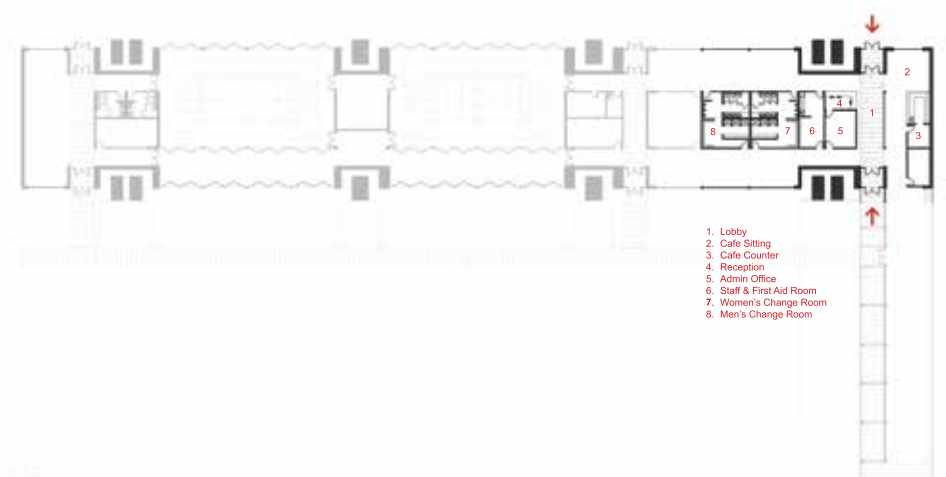


Figure A.14

Floor Plan of the building
by program groups.





The community center extends into the park to make a strong connection as an addition instead of a free standing building that is unrelated to either side of the community. It is deeply inspired by the old pier trying to connect with the past and creating an identity of the neighbourhood. A green buffer wall put next to the highway to reduce the air and noise pollution from the cars above. (Fig A.15)

Figure A.15

View of the community centre from the Park. The building is not only restricted to stay directly beneath the highway. Water features relates to the historical waterfront. Green buffer wall reduces noise and air pollution from the highway. The building facade can be fully open to invite pedestrians to socially engage with an activities inside.



SOUTH ELEVATION

from park



NORTH ELEVATION

from Tung Chau Street

Figure A.16

Elevations of the design. The linear building may discourage pedestrian movement between the old and new parts of the neighbourhood.

Review

The building is very simply in its geometry can may not represents the dynamtics of the neighbourhood enough. Although the design attempts to connect and establish an identity for this community through this building, but it is not very attractive.

The rearrangeable facade allows easier access into the building but can be confusing with the proposed primary access. It diminishes the effects of the North-South circulation extended from Pei Ho Street and Kwei Lin Street. The idea of a multi-purpose space may not be successful since it also conflicts with the program grouping into the two different wings of the building. When the facade is closed off, the linear sttructure again like the first design attempt act as a bar that restrict and discourage North South pedestrian circulation. (Fig A.16)

The design might have taken too much direct influence from the old pier. Even though the pier used to be a significant building in the community in the past, but the elevated highway above the site is also part of the development of Sham Shui Po. Hecne the next design proposal should not restrict itself relating and establishing an identity based on soley the pier, but should include the past, present and the future of the community as well.

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