Dromoscopic Adaptation
Realising the potential of spaghetti junction and obsolescent infrastructure

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“Obsolescence is the very hallmark of progress.”
Henry Ford II
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The significance of the proposal stems from changes being made in contemporary society. Ideals of densification and the attempt to provide working and living facilities within walking distance of each other minimize the required use of the car. This coupled with increasing oil prices currently being experienced after reaching peak oil in 2006, brings into question the feasibility of the personal car of the future. Living in neighborhoods which are connected by reliable, predictable and sustainable public transportation is the desired and potentially required solution for the future.

With this in mind, the redundant Nelson Street off ramp could foreshadow the future of our car biased infrastructures. What is to become of the large structures that dominate our modern cities? Are they to be left to become a ruin, a glorified modern day aqueduct or a brutal reminder of past decisions? Is there more potential for future use of these infrastructural monoliths?

This project seeks to explore one potential option for the adaptations that can be made for the benefit of a car-biased city.
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INTRODUCTION
Introduction

AIMS & OBJECTIVES

The aim of the project is to provide an alternative re-use of the current obsolete Nelson Street off ramp ‘A’ in the Central Motorway Junction of Auckland.

Looking at causes of obsolescence, other precedents and the needs of the city, the aim is to create a viable and thought provoking solution for the Auckland Central Motorway Junction. Its location seems to be potentially rich with strong connections to the CBD and Karangahape Road at a micro scale, as well as the possibility to act vertically to connect with all of the motorways which converge in this one segment of motorway. There are numerous limitations to the site, with the piece of off ramp too expensive to demolish, it will have to be re-used symbiotically with the new decided program.

BACKGROUND INFORMATION

The ‘A’ Off Ramp has remained standing in its position on the right hand side of the northern motorway connecting to Nelson Street after it was decommissioned in the mid to late 2000’s as it was deemed to be unsafe to exit from the right and caused traffic interruptions. A new off ramp (off ramp ‘B’) has been built to the left hand side connecting the northern motorway to the top of Nelson Street. Ramp ‘A’ still stands as it is too expensive to demolish1. The off ramp branches off the Northern Motorway, just before it passes under the Karangahape road overpass, travels under Hopetoun St. and ends where it rejoins the new off ramp B at Nelson Street. This now obsolete piece of infrastructure stands amongst numerous other pieces of highway in what is dubbed “spaghetti junction” and is the primary focus of this project.

RESEARCH QUESTION

How can an architectural intervention adaptively reuse a piece of obsolete infrastructure for the benefit of Auckland City?
Two

CHosen Site
Site Location

Figure 1: Site Location
Figure 2: Aerial Image of Site
Site
LOCATION

The site exists amid the many level changes of spaghetti junction. Numerous site implications will have large effect on the project including: the narrowness and length of the site, the noise from the motorway, and accessibility. Currently impossible to access, strategies must be derived to create connections from both the Hopetoun bridge and the Karangahape over bridge. Furthermore, the Nelson Street end of the site will also have to be addressed to provide a sense of destination and either end of the 800 metre long site.
Figure 6: Karangahape Road Overbridge

Figure 7, 8: View from Hopetoun bridge showing traffic through Spaghetti Junction

Figure 9, 10, 11: Photos by user ‘russelstreet’ of FlickR from Hopetoun Bridge
Figure 12: View of Spaghetti Junction at Night
Karangahape Road was once the main retail street of Auckland. It housed the majority of the big chain stores, with many stores preferring a store on Karangahape Road to one on Queen Street. However, with the decision to integrate the Central Motorway Junction right through the centre of major residential areas based on advice from American consultants De Leuw Cather in 1965, Karangahape Road suffered immensely and the value of the real estate collapsed. The massive gorge through the fabric of the region removed 50,000 residents (and customers) from the immediate area. Karangahape Road spiraled downwards, becoming the Red Light District of Auckland. However, in the subsequent decades, a slow gentrification of Karangahape Road has occurred, and the area is now synonymous with the Auckland art scene, housing numerous galleries, cafes and bars, a strong night scene and a bohemian life style.

On the bridge that passes over Spaghetti junction, there are major bus stops on either side of the road. This means there are numerous people waiting on and around the bridge. The bridge itself used to house a Saturday market, something which has been lost since the renovations undergone in 2011 to prepare for the Rugby World Cup in New Zealand. The $2.1 million renovations have since received mixed response, mainly for removing the expansive views previously available from the top of the bridge, over the harbour to the North Shore beyond.

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3 “Karangahape Road Online”, www.kroad.co.nz/kroad/history/default.asp (accessed June 7, 2012)
4 ‘K Rd bridge revamp slated’, The New Zealand Herald, September 1st 2011

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Figure 13,14,15: Various Photographs of Karangahape Road
SEVERING THE CBD

Not only did the motorway drastically alter the state of Karangahape Road, it also severed the entire CBD and surrounded it with the motorways. One of the greatest ironies of motorway system in Auckland is the severance caused by its creation to the Karangahape Road and Newton areas. Originally planned as the solution to connectivity issues; the severance caused by the central motorway junction has ostracized suburbs on the fringe of the CBD, biasing car based transportation and providing minimal crossings for pedestrians which are often exposed and uninviting.

Thus, the project must address the immediate local surroundings and their relationship with the Central Motorway Junction. Attempts will be made to re-integrate and re-prioritize pedestrians by re-stitching the urban fabric over the concrete moat currently guarding the city. Potentially, this creates numerous spaces in and around the Central Motorway Junction that would be densely populated by the public. This provides opportunities for a greater variety of programs that could serve the Karangahape Road Region.
Figure 18: Aerial of Karangahape Road before the Motorway
Site

**OBsolescence**

The current state of the Nelson Street off ramp is derived solely from its decommissioning in the previous decade. Whilst its redundancy is primarily a result of poor functionality and initial design (exiting from the right hand side of a motorway is most definitely not practical and somewhat dangerous), it could potentially be a prototype for numerous other similar infrastructures.

Today, the large aqueducts of Rome which were once used to transport water large distances into the central city, stand in fragmented ruins as a symbol of a once great technology. Are our motorways destined for a similar treatment? Are they in fact worthy of our adoration? Is the motorway the romantic infrastructural ruin of our time similar to the aqueducts – a symbol of our engineering prowess? Or conversely, are the motorways to become a grave reminder of our somewhat naïve town planning history?

The global supply of oil and the subsequent petrol prices coupled with movements towards neighborhoods connected by reliable and efficient public transportation networks foreshadow nothing but the gradual – but nevertheless imminent – demise of commuting via the personal automobile.

Based on the hypothesis of eventual obsolescence, all motorways today can henceforth be classified as obsolescent, or, in the process of moving towards becoming entirely obsolete. This creates an interesting possibility around the time frames involved in this project and likewise other architectures dealing with the obsolescent. By intentional planning in stages, with a gradual or extended construction phase, the efficiency of both the requirements of the motorway and the newly selected program which supersedes it can be optimized, so both can exist symbiotically amid the transition.

Furthermore, the decline of car usage/ownership hypothesised does not exclusively effect the motorway systems, but numerous other facets that are common place in today’s society. The most obvious other form of mass redundancy will unfold as the automobile itself (and not just from perceived obsolescence based upon trends or fashion). This in turn threatens to collapse an entire automobile based industry: mechanics, panel beaters, petrol stations and car part sales will suffer. Even insurance companies will have to find a new way to bump up premiums. This due to our over investment in the personal motor vehicle. The issue of mass vehicle obsolescence is also to be addressed and utilized as a potential resource for the project.

All of the above is intended to support and enrich the primary focus of this investigation – what is to become of urban mega-structures dominating the outskirts of our cities? Firstly the history and progression of the motor vehicle and motorways will be investigated to inform decisions made for the future.
Figure 19: Roman Aqueduct

Figure 20: Nelson street Off ramp B
There is no questioning that the automobile is one of the most seminal inventions when it comes to the shape and form of modern society. With the invention of mass produced automobiles, Henry Ford revolutionized the way we think of industry and assembly lines. So influential were his systems, a large portion of the modernist movement was based upon his very achievements, with Le Corbusier one of the automobiles greatest proponents. Cars were seen by many as the way forward and the future of our society. Le Corbusier’s numerous ideas on town planning including ‘City of Towers’ and ‘Ville Radeuse’ relied heavily on connections provided by large, expansive freeways connected towers which stood isolate in parks – envisaged at a scale only comprehensible if the automobile was to entirely dominate our cities. They were the proposed answer of the time.

The Futurist movement also embraced the new opportunities presented by the automobile. Infatuated with imagery of speed, movement and technology, F. T Marinetti stated in their manifesto: 

“We declare that the splendor of the world has been enriched by a new beauty: the beauty of speed. A racing automobile with its bonnet adorned with great tubes like serpents with explosive breath… a roaring motorcar which seems to run on machine-gun fire, is more beautiful than the Victory of Samothrace.”

Not only were utopian (dystopian) cities imagined, economically the city of Detroit prospered from the ascendancy of the automobile industry. Detroit grew massively on the back of Ford’s success with numerous other factories mass producing automobiles in the city. In the 1950’s freeways were built throughout America (around about 10 years before the plans for Auckland’s Motorways) and allowed mass commuting of the workforce from suburbs into the city centre. Cars were further reinforced as the lifeline for Detroit and its inhabitants.

However, when the Oil Crises of the 1970’s caused petrol prices to surge higher and higher, people began to question the role of the automobile. Artists and architects began to reflect the changing opinions in their work (e.g. Cadillac Ranch by ‘Ant Farm’ in 1974 which buried Cadillac’s at an angle equal to the pyramids of Giza into the ground reflecting the demise of the public perception of the car). Subsequently, we have experienced numerous oil crises, yet cities are still being severed by the introduction of motorway systems.

Detroit ironically fell victim to the urban sprawl resulting from its overinvestment into car based infrastructure. The spreading of the population caused the city to implode from the inside-out; massive amounts of buildings became obsolete. Detroit was impaled on its own sword, and to this day still experiences a decrease in population annually and substantially higher rates of poverty than most American cities of a similar size.

The state of Peak Oil was reached in 2006; the demand for oil now unquestionably outweighs the supply, encouraging more dangerous drilling and the imminent consumption of the last of the planets oil. Opinions of the car have shifted within a single century from it being the idealistic invention of a new era, to the grimy machine which pollutes and strangles our cities, empties our wallets and squanders our planets resources yet is seemingly so vital to our existence within contemporary urban life.

Figure 21: Le Corbusier's City of Towers; idealises large motorway infrastructure.
Figure 22: Ant Farm’s ‘Cadillac Ranch’, one of the first signals of the changing attitudes towards the automobile.
Three

LITERATURE REVIEW
The Cheonggyecheon River restoration project in South Korea is an attempt at a renewal of the river was buried in 1964 in favour of a Highway construction. The river was replaced by an elevated highway that was 50-80 metres wide and 6 kilometers long. Most Interesting is the decision to keep the large motorway structures, protruding from the river like masts, signify the history of the site, not denying its existence, and leaving a reminder of the once car bias decisions of the cities administration and people. Keeping the bones of an old structure is a powerful move and employs a similar romanticism to that of the roman aqueducts. When dealing with situations of obsolete infrastructure, it is important to reference the past, looking to utilise existence structures and/or use them as a feature.


Figure 23: View of Motorway in Cheonggyecheon before river restoration

Figure 23: View of current river restoration in Cheonggyecheon

Figure 24: Retained motorway structures used as a feature in Cheonggyecheon
Adapting Obsolescence

T A T E  M O D E R N  -  L O N D O N

The Tate Modern Art Gallery in London is one of the world's most renowned examples of adaptive reuse. Originally the Bankside Power Station, the large brick monolithic building was decommissioned in 1981.

After running a competition for its reuse in 1994, the scheme from Herzog and de Meuron won. They proposed subtle alterations to the original power station rather than a bold new design. The original features of the building were identified and emphasized by the architects. The entry space is a 5 storey tall turbine hall, left untouched. At what is a nonsensical scale for a foyer, the hall adds unquestionable drama and atmosphere to the building, keeping the height uninterrupted and the original steel girders which housed the old generator exposed. As stated by Rowan Moore, author of 'Building Tate Modern', "It's a space you never could ever have achieved with a new building". The architects specifically acknowledged and worked with what was perceived by many other entrants as flaws of the building.

More recently, extensions have been planned for a new building behind the original Bankside Power Station. Again, Herzog and de Meuron were commissioned and again pay due respects to the original power station. The first stage involved adapting the colossal oil tanks as a live art performance space. The tanks have been emptied and left relatively unchanged. The industrial concrete structures are preserved and the scale disproportionate to human inhabitance enhances the drama of performance and strongly references their previous use.

Finally, the design for the future extension takes a slightly different stance. Being a stand alone building, there were no issues of preserving or maintaining old features. Instead, Herzog and de Meuron focused on echoing elements of materiality whilst maintaining a sense of individuality from the original station. The facade is constructed from brick, spaced out to allow light to pass through, a material which is considered out of fashion, and very rarely seen in contemporary high rise architecture. The old and the proposed buildings contrast formally, however through integration of similar materials, there is a strong sense of relationship and continuity with the new design. The success of the Tate Modern is the adaptation of the building for new uses while retaining its historic features, continually referencing old materials and utilizing obsolete structures.

Figure 27: Proposed extension to Tate Modern
THE HIGH LINE - NEW YORK

The High Line is a project in New York utilizing an old rail line originally used as industrial transportation in the meat packing district. Made in 1930, the elevated railway stood derelict and unused for decades after the decommission of the line in 1980. A group called ‘Friends of the High Line’ formed and lobbied for the preservation of the high line, and adapted into a public park.\(^{12}\) Initiating a design competition, the Friends of the High Line group encouraged ideas that would evoke debate and circulation of ideas surrounding the future of the High Line. The entries varied from the highly realistic and functional to the absurd – one entrant even proposed turning the entire length of the High Line into swimming lanes. Ideas of similar use or function can perhaps later be looked at as inspiration for program decision.\(^ {13}\)


Figure 29, 30, 31: Joel Sternfield’s Images from the series ‘Walking the High Line’ documenting the seasons on the High Line after its decommission.
Integration of the Past and Present

Eventually, the winning entry from James Corner’s ‘Field Operations’ proposed an urban park. Their aim was to pay respect to the natural course of the high line post 1980, primarily inspired by the long grass and wild flowers which had inhabited the high line since its decommission, illustrated in the series of photographs taken by Joel Sternfeld (the photos which greatly helped the lobbyists for the preservation in the High Line in the first place\textsuperscript{14}). Integrating over 200 species of grasses, wildflowers, and shrubs, Corner craftily integrated built form with native flora, and subsequently they created the High Line design that stands nearly finished today\textsuperscript{15}. A design decision was the integration of the old line as a key feature of the project. Leaving large remnants of the old tracks, which interact both with the planted areas and the paving, people can visually connect the previous freight line function of the site to its current state.

Another interesting move by Corner to expose the history of the site was the west thirtieth street cutout and viewing platform. The structures concrete has been stripped back and removed to reveal the structural grid of steel beams and girders below. This is also integrated with an access point, providing views through the steel structure both from above and below. This creates a sense of visual destination when using the circulation. A steel grated platform allows for views underfoot for those on the High Line itself.

\textsuperscript{15} Ibid, 74.
One of the largest issues facing a site of this narrowness is entry/access. Looking at how the High Line has dealt with entry will play a key role in formulating circulation solutions for my own site.

The Gansevoort Street access point is currently the primary access point to the High Line. The beauty of this scheme is that it allows close contact of the original steel structure. The stairs rise through the centre. You are lifted up to a pristine green plane above a heavily urban area. This emergent experience is a relief from the hectic city below. Cutting directly in the middle enhances this sense further as the plane is evenly spread around you, and an abrupt transition from old to new, dark to light, urban to nature is experienced. The new corten steel edge enhances this sense of boundary through which one passes. The stairs are also running along the primary line of direction, enforcing the linear movement path of the project.

The benefit of the steel construction at the High Line allows for a relative ease in cutting a void, far much more achievable than that of the Nelson Street off ramp’s concrete construction. It also has the benefit of a greater width, allowing for usable space either side of the entrance.

Currently under construction, the 30th street access point employs a slightly different approach, the stair well rises from the pavement, again along the primary line of movement of the footpath. It then turns an acute angle, and follows the path of High Line movement. Straddling the side of the elevated railway this time however, allows for minimal disruption of the function on the top of the High Line, but still allows for a similar sense of emergence. Fluidity of motion seems to be a key driver for Corner, drawing people in from their original line of movement, then shifting them on the vertical circulation and projecting them outwards along the line of the High Line. This entrance point also addresses the needs of wheel chair access.

The High Lines programmatic and planting variety has caused the surrounded neighborhood to become prime real estate, with large developments occurring all around it. It has provided a naturalistic escape from a concrete jungle.

Access Strategies

Figure 35: Carving into the original High Line structure

Figure 36: Gansevoort access point to High Line

Figure 37: Gansevoort access point to High Line
**Adapting Obsolescence**

**EVALUATION**

Many lessons can be taken from the precedents analyzed. The importance of integrating new designs with the old is a key lesson. All the precedents maintained and emphasized historical features within their new designs. Different techniques were used: exposure of the obsolete infrastructure, reuse of old elements, or reusing similar materials in new construction.

The High Line also provided further insight into access strategies. With its previous function being the most similar to Nelson Street off ramp, lessons around the delicacy of accessing long narrow sites were learnt. Utilizing paths of movement and techtonic expression of previous structures were two methods employed by Corner.

For the Nelson Street off ramp, consideration of the old structure must be given respect. Integration between new design and the old structures are to be addressed delicately as demonstrated in the precedents. The new design should not engulf or dominate the old, rather coexist in a manner similar to the precedents analyzed.
Figure 38: View to site, taken at speed
The concept of speed is intrinsic in modern day cities. Everything exists in perpetual motion, nothing is static. In a time of instant gratification, when everything from turning on the tap to the internet is expected to be instant (and if not it is conceived as unbearably slow) speed sculpts, shapes and moulds the very fabric of our cities. Pedestrians swell through the streets, surging as a uniform swarm. Cars meander through our streets pushing, swerving and competing, notoriously frustrated by limitations of speed. Our entire road system is governed by speed. Technologies are developing exponentially. We live in a Capitalist society, dictated by money, and as everyone knows, time = money, therefore speed (the act of achieving something at a faster speed implies less time) has a massive impact on modern day society.

Paul Virilio, a French cultural theorist, has written numerous essays on the topic, which he dubs ‘Dromology’, derived from the Greek word ‘dromos’ meaning speed or ‘to race’ and the suffix ‘-ology’ meaning ‘the study of’. Dromology translates to ‘the science or logic of speed’16. Subsequently, ‘dromoscopy’ then translates to the viewing or examination of speed. Intrigued by the experience of the passenger in a vehicle, Virilio theorizes about the implications of speed and its place in society. Virilio’s essays will play a key role in influencing the project with specific attention placed on his writings about experiences of the passenger in the automobile.

Whilst speed was initially perceived as an exciting new frontier unlocked by inventions such as the automobile (page 28), the exponential rate at which the speed of society has grown has created a backlash spawning the resultant ‘Slow movement’. The Slow Movement advocates slowing down the pace of every day life. Including slow food, slow travel and slow design17, it is the result of a society developing and moving at exponential speeds uncomfortable for large portions of society.

Virilio also states that the speed at which something happens may change its essential nature, and that which moves at speed quickly comes to dominate that which is travelling slower18. When looking at car based infrastructure like the motorways, and the priority given to the vehicle in modern day cities, we can understand this concept. Pedestrians are considered subsidiary to the automobile in Auckland, not only is this determined by the town planners of the past, but the very speed at which pedestrians and vehicles exist respectively.

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Travelling at speed, our perception of space and geometry are altered. When considered, travelling at such a speed seems unnatural to a human. Our bodies - incapable of adjusting to such tremendous velocities - warp and deceive us.

In reality, it is the subject who is propelled along a trajectory moving through a stationary environment, however to the perception of the person in the vehicle, it is as if the scenery is the one in motion. As described by Virilio in ‘Negative Horizons’, the effect of a reverse cinema is experienced19. The viewer is the one projected through a stationary landscape, rather than traditional cinema where the projection of moving images occurs on a static object. This raises issues around relativity. When travelling at excess speed, it is perceived as if one is travelling in a straight line, and the land moves bends and twists around them.

During the following investigation, photography will be utilized in an attempt to capture and analyze the phenomenon of aesthetics and perception when travelling at speed. Firstly, still frame photographs concentrating on distance vs. clarity will be explored. Illustrated in the photo right, the pedestrian in the foreground is indistinguishable and blurry, impossible to perceive bar a sense of mass around their torso, and a small palette of colour. Detail is completely imperceptible. However, objects further away are still clear to the eye, creating a somewhat paradoxical relationship to what is commonly expected; that which is close is deduced into primarily its mass, and colour, comparatively, the detail in the background is perceivable at a much higher level than that of the foreground.

The thickness of the top railing is the same as that of the vertical elements, however the verticals almost disappear as one speeds past them, whilst the horizontal is exaggerated by juxtaposition of clarity. This leads to the conclusion that when travelling at speed, the horizontal is emphasized, whilst the vertical becomes subservient.

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20 Ibid, 114.
Figure 39: View to site, taken at speed from Hopetoun Bridge
"...a reversal of perspective such that it now appears as if it is the landscape that is in motion and not the traveller; or rather, that the landscape is in motion for the traveller."

- Schnapp

Figure 40: View to site, taken at speed from below
Figure 41: Difference of clarity also occurs at varying levels based upon distances, as per shown in the image above. The 3 different lampposts are varied on a gradient from indistinct blur to relative clarity based upon their distance from the traveller. Also seen in the shrubbery in the foreground compared to the distance, detail is more distinguishable from afar than up close.
The fact that the site is likely to continue its existence as a motorway junction implies a substantial portion of the people viewing the site will still be in a car travelling at speed. This raises interesting thoughts on how the site is to be perceived. From varying speeds, proximity and vantage points, the sites appearance can be altered drastically by ones movement. Our relationship is not on the site, rather in reference to the site, where the site exists not as a physical boundary but a datum or reference to which we can position ourselves against. Furthermore, when travelling at speeds, our points of reference potentially alter, we perceive ourselves to be travelling in a straight line, and thus the very physical geometry of space is altered from our perspective.

In the following diagrams, one specific route and a journey along the site are taken, the curvature of the path is calculated and radii then run to the centre point, extending outward at even intervals along the chosen path. As shown in the image right, where the site itself is calculated, if the extended circle radii can then all be made parallel, the resulting shape is the perceived geometry (if one was to perceive they were travelling in a straight line along the site). As a result of the final geometrically adjusted image in the set, that which occurs along a convex segment of a journey is likely to be perceived for a shorter amount and the surrounding context is overlapped in the image. Alternately the concave side behaves as the exact antithesis, the experiential time is increased and experiences are elongated if falling within one of the large circles used to calculate the curvature in the image. Using the idea of perceived geometry, not only can architectural considerations be enhanced by the viewers trajectories, they can become a direct result. Elements perpendicular to the journey can be arranged in a similar fashion to the circle radii to enhance the vertical pulses, certain views can be prioritized by the concavity of the motorways sweeping curves. These aspects are primarily explored in the facade design section.

Dromoscopy

PERCEPTION OF GEOMETRY
Figure 42: Calculations for reinterpretation of context, lines taken perpendicular to site
Figure 42: Reinterpretation of context based on geometry of site
The previous explorations have confirmed that speed, is in fact, a matter of relativity. But how do we express the relativity of speed? What are the aesthetics of speed? Eadweard Muybridge, an English photographer of the late 20th Century, focused on the capturing of individual frames in order to convey sense of movement and pioneered ideas of motion-picture projection to display movement, a predecessor to traditional cinema. His work straddled science over art, and Muybridge showed extreme interest in the motion of animals at speed. By setting up numerous cameras, Muybridge captured still frame photographs along the movement path of an animal in locomotion, which when combined recreated a sense of movement and speed \(^{21}\).

Photography of movement has evolved to imply an element of time within a single frame image. By overlaying numerous stills indicating a change of location, or essentially, an essence of speed, motion is able to be conveyed and commonly understood. This is shown in the photo adaptations of Muybridge’s original works by Springer Parker from the series “after Muybridge”. Utilizing the same photos as taken by Muybridge, Parker displays the concept of speed and movement far more successfully than Muybridge by overlaying his stills on one image rather than placing them side by side \(^{22}\). Whilst the image is drastically more ambiguous, it is this vague aesthetic which resonates strongly with our modern day experiences of speed.

This idea also falls in line with the paintings of the Italian futurists. With speed a certain enigmatic ambiguity emerges. In the painting ‘Swifts’ by Giacomo Balla depicts the flight of a bird, there is chaotic visual language focused on overlapping, transparency and slight positional changes. Balla represents the Bird’s hurried flight as a blur of rays. \(^{23}\)

Paul Virilio’s idea of ‘reverse cinema’ in his book ‘Negative Horizons’ describes the apparent phenomenon as if the landscape that is moving rather than the observer when travelling at high speeds \(^{24}\). How then would this appear to us using similar techniques to the aforementioned artists? On the following pages are examples of what I have dubbed ‘Virilio Strips’, trying to capture and simulate the experiences along different journeys through Spaghetti Junction. Still shots are taken at even intervals, similar to Muybridge’s early work on locomotion, but are then to be overlaid along a horizontal (perceived) line of movement.

Figure 43: ‘Galloping Horse’ by Eadweard Muybridge, 1878

Figure 44: ‘Swifts’ by Giacomo Balla, 1913

Figure 45: Springer Parker’s Manipulations of Muybridge original series on animal locomotion, implying a sense of movement and speed through its ambiguity.
The Aesthetics of Speed

REINTERPRETING THE SITE

Southbound ‘Virilio Strip’
Northern to Port Virilio Strip
Northern to Port Virilio Strip
Figure 46: Compressed ‘Virilio Strip’ simulating greater speed
Dromoscopy
PERCEPTION OF DISTANCE

Furthermore, when travelling at speed, not only is the horizontal elements of a physical object emphasized, the perceived distance appears reduced. The faster one travels, the more one has to perceive in a shorter period of time, and a compression of distance along the line of movement occurs.

Subsequently it then becomes the vertical which is accentuated. Previously, horizontal elements were accentuated through a sense of continuity. Verticality however provides sense of pulse and rhythms – a datum for speed as it’s perceivable geometry is unaltered. Speed is entirely relative, so how are we to know how fast we are travelling we are going if nothing to compare to.

This brings up the importance of the datum for speed, in which the vertical element can serve. It will act as a pulse or rhythm upon which speed can be assessed. The ‘vertical’ elements can be further distilled into elements which exist perpendicular to the trajectory of movement. The relationship between perpendicular elements is to be manipulated and provides the gauge to measure speed against. The common phenomenon of lampposts appearing to speed up then whip past a vehicle with an audible blur, will be attempted to be simulated through repetition of vertical (or elements perpendicular to the direction of movement) building elements.

In the accompanying photographs the previously shown ‘Virilio strips’ have been condensed horizontally - implying a shorter time frame but greater speed - and stripped of colour. These versions of the strips have an element of time, adjusted for the speed of experience. Subsequently The condensed monochromatic Virilio strips concur with the idea of continuity in the horizontal with major variances occurring vertically to provide the pulse.
Regardless of the program selected, speed will play a factor in the scheme. Despite the prediction of the usage of the personal motor vehicle massively decreasing, there will inevitably be cars utilizing the network simultaneously with the chosen program. Through photographic studies, the experience of speed has tried to be conveyed and explored.

The point to which this is applied to this project becomes primarily formal. Key lessons can be taken from the section on Dromoscopy. At speed, mass is favored over detail, with color and general shape being the main perceivable elements. The further away one is from something, the easier it is to perceive accurately thus considerations must be taken into account in regards to proximity/speed of users and the desired clarity of architecture in the project. Certain areas of the site will receive greater focus from vehicles depending on their convex/concave relationship to the path of motion, subsequent privacy and visual shielding considerations outside of program alone must be addressed in the project.

Pedestrians will experience the building on the site predictably, and thus will be perceivable at all times. However, for vehicles travelling at speed, an extenuation of horizontal elements occurs, with elements existing perpendicular to the direction of movement providing the datum for the velocity of the vehicle. This allows for pedestrians to be privileged of some views imperceptible to higher speeds, whilst experiences in a vehicle will also be unique do to their inherent speed. The architecture must respond to all modes, speeds and distances. Facades will be elongated along lines of speed, and at a scale relatable to the movement of vehicles.

The speed of the site is not to be ignored, restrained, or resisted rather it is to be embraced and the project will attempted to be “enriched by the beauty of speed”.

**Dromoscopy**

**EVALUATION**
Figure 49: The effect of High speed on a relatively mundane space.
Four

FORMULATION OF BRIEF
Since the amalgamation of regional councils into the ‘Super City’ in 2010, numerous plans have been hypothesized for the ultimate solution for Auckland’s rail network. Mayor of Auckland Len Brown’s election campaign paid pertinent focus on the improvement Auckland’s public transportation network. The biggest initiative of the recently released Auckland Plan is the proposed Central Rail Loop, connecting the centre of the CBD to the rail network.

The Central Rail Loop proposal indicates an extension of the current lines to make Britomart a through station, with new stations located at Aotea, Karangahape Road, and Newton. This provides an excellent opportunity for a program for the selected site. The obsolescent infrastructure of the motorways can be reinstated with a new transportation mode that is a more viable and sustainable future option. Henceforth, the chosen brief for this project will be to design the new Karangahape Road train station for the future Auckland rail network. The network itself is to be redesigned and located on the motorways and will vary from previous solutions. Construction is to begin from Karangahape station as a central starting point. Then slowly the system is to spread outwards, engulfing a lane of the motorways in the required direction over time whilst the motorway remains running, adhering to concepts of transition between programs due to the obsolescent (page 26).

The time frame of the construction is dependent on the availability of materials and declining rate of vehicle usage. These materials are to be sourced from the initial cause of the motorway obsolescence—the cars. Cars are to be brought to a central recycling station, whereby ferrous metals (which make up approximately 65% of a car’s total weight) are to be recycled into railway tracks to form the construction of the network. Other elements which result from the recycling process of cars are to be addressed further on page 77. With the network now existing on the motorways themselves, the location of the station is to be shifted from proposed site stated in the Auckland Plan on Pitt street, to the Karangahape Road over bridge. This creates an interesting potential for vertical connections to platforms, as well as a street frontage onto Karangahape Road.

The original site of Nelson street off ramp A, will be utilized as the primary connection from the station and Karangahape Road to the CBD. It will become a green corridor similar to that of the High Line, providing a safe pathway for commuters and patrons.

Initial concepts involved ideas of transforming the obsolete off ramp into the steel recycling plant for obsolete cars, in a two stage process where the recycling plant would eventually become the railway station. The linearity of the site was to be utilized to tease out the linear production process of steel recycling. The steel created was then specifically to be utilized to create a new railway network, stretching over the current motorway infrastructure.

1 http://www.aucklandtransport.govt.nz/improving-transport/city-rail-link/Pages/default.aspx

The recycling plant would have acted as a central node for the creation of the rail network, the railway lines would branch out from the plant as they were forged, like Mycelium. Progressing at what could be perceived as painstakingly slow, the process was not to be undermined by public pressure or financial benefits, rather a new branch of the slow movement was to be witnessed by all as commuters pass by daily and the reality of the construction became apparent to all.

Whilst this is a way for the public to experience the realities of obsolescence, the implications of heavy industry so close to large population of people was counterproductive to the restorative aims of this project. However, the nature of recycling cars is still applied in the project, rather off site in a less obtrusive manner. Cars are still to be utilized as a resource, with the metal from the recycling used for both the rail construction, and the materials for the train station.
For the project, a new rail system will be integrated with the existing motorway system for the wider Auckland region. With highways moving towards a perpetuating state of obsolescence, the newly conceived rail network shall slowly consume the existing network, spreading outwards from the centre. Various techniques such as narrowing of lanes, or even complete eradication of lanes will be employed where possible to allow space for the rail system, whilst the ever diminishing population of car owners can still indulge their carbon heavy driving habits.

The network itself shall focus primarily on both the Northern, and North Western corridor of motorways, with current rail lines servicing primarily South, East and West. Additional possibilities for the overall network are to be including: reactivation of the Onehunga to Port line and extending it through to the airport as well as implying the extension of an isthmus loop along the proposed Waterview motorway extension (image right).

The northern line currently has a dedicated bus lane with platforms, ready made for conversion to light rail. Utilizing light rail allows for trains to cope with curvature and slopes of motorways at the expense of top end speed. Travelling at an average of 80km/h Auckland to Albany will take approximately 20 minutes. According to the census of 2006, 90,000 inhabitants of the North Shore commute daily to the CBD (some of this load will be absorbed by a ferry service, which currently has plans for expansion to Beach Haven, Hobsonville, Takapuna and East Coast Bays) The North Western Line will also be adapted to rail. The key aspect of these proposed lines, is that as they travel towards the city, each line will perform a loop of the CBD, utilizing the 2006 port Central Motorway Junction expansions. Lines from the west are to enter the city at Nelson Street to the waterfront and linking through Britomart. This allows connections to the old heavy rail system. The train will then go through Port and back through spaghetti junction to north. This means each train goes through the karangahape station twice making it a core hub for the system. The loops of the CBD also create both a clockwise and counter clockwise central loop, with double the number of trains as the other lines.
Figure 53: Proposed Railed Network 2050
The construction period is to occur gradually over a period of time. The obsolescent nature of the motorway systems (page 26) will incur a gradual take over by the railway system. Initially spreading out slowly by utilizing unused space, the rail lines will slowly regain dominance over car based transportation by overtaking entire lanes. The images below show the construction process over time, with the dominant black line of the motorways/cars dwindling to a thin stream and the red line of the train superceding them.

1. The construction is to occur over an extended time frame, spreading outwards from the centre, branching out and reaching further and further. This first level of construction will be focused around the proposed Karangahape Road site.

2. As the network begins to expand outwards, key focus will be towards the port sections to prioritize the central city loop. Meanwhile the northern and the western lines will begin construction whilst the motorway traffic begins its decline.

3. As the loop nears construction, the stations along the central loop will also need to be constructed, with extensive renovations also required to be made to Britomart to create the through station.
with the loop complete, the potential for the service to commence is possible, with busses shuttling people from unbuilt stations to the current end of the tracks another large decrease in vehicle users is witnessed

The track progresses further and further, shortening shuttle bus distance travelled. Stations are to be built in time with the expansion of the lines. Vehicle numbers on the road decreases as the lines reach the outer suburbs and petrol prices continue to rise

Figures 54–59: Staged construction process of new Rail system
Program

STATION PRECEDENTS

Stations tend to be relatively simplistic, with large open areas for the platforms, an initial large entrance space and a small number of amenities such as toilets/cafés, it is the circulation that provides the most important aspect. With large numbers of people exiting a train at one time, extended circulation paths allows for the flow of people to disperse at their own speed. Likewise, with the main entrance/exit points, their size alone filters people from a singular batch into a constant stream. The transition from public spaces is also interesting when looking at precedents. Two precedents recently visited was St. Pancras and Kings Cross Station in London.

The relationship between the public space and platform area is dealt with at Kings Cross with a horizontal transition from the new plaza into the old building. This transition of architectural languages provides a strong threshold between the platforms and the public space. People move from the new addition into the traditional building where the platforms are contained.

St. Pancras also separates the public from the private however uses changes of levels to provide the transition between spaces. With the public spaces and ticketing located on the ground floor, passengers travel up stairs to the level with platforms. This again provides a sense of transition from public to private by moving vertically through the spaces.

Circulation is controlled in both instances by ticket turnstiles, but is elongated to spread out the people.

In both cases the street front entrance is large and porous, allowing for easy transition from the street into the station.

Architectural techniques have been utilized in both examples to create a sense of transition between public and patron only areas. With the simplistic program comes a very important circulation system. Relationships between spaces is to be enhanced with changing architectural languages that reflect the transition.
Formulation of Brief

Programmatic Requirements

The following list is the program required for the trains station to be built at Karangahape Road. Most precedents look at involved large amounts of retail shops, containing cafes and chain stores. A decision has been made to not provide retail shop space in the station in an attempt to bring a customer base back onto Karangahape Road itself.

Train station

- Public Plaza
- Wide Circulation for large numbers of people
- Waiting areas/seating
- Platforms
- Ticketing

Karangahape Road bridge

- Strong public interface and vertical element for place marking
- Maintain the bus stations
- Provide sheltered access to the station
Network Design

SERVICING THE CITY

In the image left is Auckland Plan’s proposed Central Rail Loop in red. Connecting Britomart through the CBD Via new stations at Aotea, Karangahape Road and Newton. This plan proposes massive amount of digging (Karangahape road station is set to be at 30 metres below ground) due to the heavy rail systems inability to deal with large inclines. This also means great disruptions for surrounding property owners, similar to the initial severance caused by the motorways.¹

¹ Dearnaley, Mathew. ‘210 city properties in path of proposed rail link’, NZ Herald, July 4, 2012

The bottom image is the newly proposed system for this project. The yellow lines are indicative of the new network, each line will enter the city, do a loop of the new central rail loop, then exit in the opposing direction e.g. The northern line will enter the city after passing through spaghetti junction and travelling through port, looping around the city and exiting from Nelson street before heading out west (and vice versa for the western line), this allows for both clockwise and anti clockwise loops as well as doubling the capacity of the stated route. This option also facilities city amenities ignored by the heavy rail option, with the hospital and university serviced by their own stations (as well as a connection between Parnell and the university stations for transfer between the two rail modes), as well as servicing the newly expanding Wynyard quarter, and the Herne Bay/ St. Marys bay area with a Pt. Erin Station.
Locating platforms was primarily a space derived process. Where space was available adjacent to the selected routing of trains, it was utilized, with subsidiary importance placed upon straight lengths of motorway and proximity to the bridge.

The result locates the four platforms all on the southern side of the Karangahape over bridge. 3 of the platforms are located on the lowest levels, with only 1 being on the top level. This groups the platforms into a contained area, allowing circulation to service numerous platform at once. Space restrictions impact on circulation play a huge role on the project, and platform location is likely to change as the station programme is more developed and tested so that the most functionally apt locations are found based upon circulation. Each platform will be serviced by ramps as opposed to escalators (ramps will be used to give similar effects to sliding and changing levels that take place through Spaghetti Junction). The linear arrangement of the site makes crossing roads on one level impossible meaning they each need individual vertical circulation for wheelchair access.
Five

STRATEGIES
Figure 66: Karangahape Road Strategy Diagram

- Placing a vertical element aligned with the view line from where K Road turns corner.
- Secondary access point to avoid pedestrians crossing the road, providing subsidiary access, smaller, maintains height, and encourages use of public plaza.
- View line, aligned with a corner of K Road.
- Public plaza tapered to scoop in pedestrians from major flow direction.
There are 4 major design Strategies for Karangahape Road.

Firstly is the importance of a vertical presence. This is vital as a place marker for what is to become a central transportation hub. This vertical element is to be visible as one rounds the corner on Karangahape Road just after the Pitt Street intersection. Not only is the vertical element to be a beacon for the station, it will also house lifts for wheelchair access, and act as a stack chimney, as the platforms below are likely to experience large amounts of emissions from surrounding motor vehicles.

Secondly is the positioning of the public plaza. By prioritizing the Northern focus towards the views of the harbour northwards is created as well as optimizing sun. This is where the bulk of the circulation will exist, however secondary access will be supplied on the south side for patrons on the other side of the road.

Thirdly, the shape of the plaza itself is to taper off the footpath to draw people in off the street.

Finally, the street traffic itself also needs to be addressed. Regardless of numerous access points, people will be still cross the road. Converting the bridge itself into a shared space for pedestrians and vehicles, reduces the speed of vehicles and shifts the priority to pedestrians. This allows for safer access across the road. Prioritizing pedestrians will be achieved by removing curbs, providing one surface for both road and footpath alike. Similar techniques to the Darby Street shared space off Queen street will be adapted.
It is an important aspect of a railway station to have a strong relationship to the public. In my strategy, the completely public interface of Karangahape Road will act as a public plaza, facing towards the views and sun looking north. A secondary lower plaza off the street will act as a mediator between the platforms and the streets, slightly more private from the first plaza. It’s main role is to catch the passengers from the station and disperse the batches of people.

As earlier identified, the platforms are primarily on the South side of Karangahape Road, by placing the ticketing area just under the Plaza, it allows for a transition and compression as passengers pass under Karangahape Road bridge.

Changes in elevation also indicate to the inhabitants changes of public/private with 3 of the 4 platforms being on the lowest level possible this is further reinforced.

*Figure 69: Spatial Section*
Strategies

IDENTIFYING CIRCULATION

The heavy space restrictions of Spaghetti Junction create issues around vertical circulation. The buildable identified in this exploration is the space being that not inhabited by vehicle or rail. It is highlighted firstly for the lower level, secondly the top level (note the long solid blue strip of Nelson Street Off Ramp A). The two diagrams are then added, with the areas in which they intersect represented in the final image in green. This space is core to vertical circulation between the levels, and will be one of the key design drivers. Also worthy to take into account is the relationship to the chosen platforms, as well as the Strategy for integrating a Public Plaza off Karangahape Road.
Strategies

MODELLING STRATEGIES

The initial physical responses to my outlined strategies were based upon ‘sketch modelling’, form was given a subsidiary value with emphasis placed upon representing the different outlined strategies.

Applying the aforementioned strategies, the public plaza is evident. A large vertical element marks the place of the station at Karangahape Road. Horizontal structures provide pulses to the cars travelling at speeds.

Strips of card indicate buildable spaces and possible connections to the bridges.

Figure 74-77: Initial modelling exercises
Strategies
SECONDARY PROGRAM INTRODUCTION

The strip of off ramp itself will not only be utilized as the primary connection to the CBD, but also to reintegrate the market back into Karangahape Road bridge. A market was previously hosted on a Saturday morning and popular amongst locals.

Whilst issues around private motor vehicle use have addressed commuting and personal transportation, the realities of freight have not been addressed thus far in the project. Similar to the personal vehicle, freight via petrol powered trucks may well experience a similar fate to the personal car. Currently, produce is exported and imported from all over the country and worldwide. With peak oil now in the past, long distance freight of cheaper produce (e.g. fruit and vegetables, dairy) seems nonsensical, with the likely outcome to be massive increases in food prices. In order to address this, cities need to look within their own limits, sourcing food from their outskirts and green belts - relying on their own soils and consuming seasonally in order to become more resilient. Regardless, if this way of producing food was adopted, the produce would still need to be transported into the densely populated areas from the outer regions. The newly proposed rail network, with greater connectivity regionally, can thus be also adapted to introduce a freight aspect into the system.

Already acting as a central transport node, it makes sense to integrate the sale of the produce at the chosen site. By incorporating a strip produce market along the off ramp, it can act simultaneously as a market and access way - a similar programmatic symbiosis to how the motorway and rail system will work together - and sell the local produce to a portion of the Auckland population. Furthermore, with the intensification planned around the back of Karangahape road as per the Auckland plan, there will be a large influx of residents to the immediate area which the market will service as well as commuters. With this in mind, a further rail connection could be added from the southern motorway, connecting to the vast majority of Auckland’s produce in South Auckland.

This also puts into use the Southern end of the off ramp, which tapers into an almost unusable space with very little access, trains would be able to roll in then back out after dropping freight produce off, which can then be carried by a gantry through to the market stalls. This creates the needs for a loading dock in the back of the ramp, and short distance transportation from the loading dock along the off ramp.

The following is the key programmatic requirements for the market and Nelson Street off ramp.

- Circulation spaces for both market and commuters
- Selling space with areas for retailers separated from the public
- Loading bay/platform and transportation gantry

This affects the layout of the platforms, and resulted in a decision to shift the platforms to the northern side of the site where circulation is easier to manage.
Figure 78: Movement/circulation and spatial relationships between programmes
With all programs and relationships realized, the site was massed in accordance to the rules set out in the methodology and the program spatial relationships. The light blue platforms have been relocated to the northern side based on circulation requirements. Circulation (shown in yellow) connects from the lower public platform to the market/CBD access. For access to the platforms, patrons must enter the ticketing area underneath Karangahape Road over bridge then through long circulation ramps which connects between the levels via the areas designated in diagrams on page 85. The freight section inhabits the Southern end of the site, allowing dispatching of produce from the South. The potential remains for the earlier identified platforms which were decided against to be reinstated as freight platforms, allowing greater connectivity for regional produce. The section illustrates the integrated nature of the project with the motorway itself. The motorway still functions and the building takes on a similar form to the original entangled aesthetic of Spaghetti Junction.
Figure 81: Massing of programmes - Section
The Facade is the boundary between the train station and the motorway. Its function is a separator between modes travelling at different speeds, and thus must respond accordingly. It is important to maintain simplicity as vehicles will only perceive mass and colour. It is also important to not over complicate the facade as it may cause distraction to drivers. For pedestrians however, large monotonous facades are to be broken down to a relatable scale. The large panels designed for vehicles are segmented at secondary intervals providing vertical vistas for the pedestrians. Because verticals are diminished and horizontality exaggerated at high speeds, the small vertical breaks provided for the pedestrians will be nearly imperceptible when travelling in a vehicle.

The amount of shielding provided by exterior panels is to be decided by two factors: the interior function of the contained space, and the focus on the area due to the perception of geometry at whilst travelling at speed (see page 46.). The programs influence on the facade will be a case of privacy required for the interior use.

The facade will be made up of horizontal panels to accentuate speed. They will be perforated to provide a visual screen for vehicles but also allow some light to pass through to the interior. This will provide great interaction with the light from cars at night and natural light during the day. Perforations provide a level of transparency that will allow for overlapping of panels, creating a similar effect to the photographic manipulations of Springer Parker. The panels will be organized in an irregular arrangement but controlled around the path of motion, reinforcing the previously explored aesthetic of speed (page 50.).

The aim is that each panel provide one second of coverage. For cars travelling through Spaghetti Junction this results in a 20 metre long panel (70km/h equates to 19.4m/s). For pedestrians travelling at an average of 5km/h (or 1.38 m/s) a one second period equates to a 1.38m long break between panels.
Figure 84: Facade integrated onto site
Six

CRITICAL APPRAISAL
CRITICAL APPRAISAL

The project’s approach to first establish techniques of translating the phenomenon of speed into architectural properties before assuming a program proved to be beneficial. The resulting architectural lessons from Dromoscopy can then be applied to other architectures which inherently have a condition of speed. The formal languages developed as a result of analysis of Paul Virilio’s essays on dromoscopy and photographic explorations aim to enrich the architecture and the experience of all of the users of the building, whether pedestrian, vehicular or rail.

Selection of the program post site analysis and literature review greatly aided in predicting the outcomes caused by obsolescence assessing the needs of the city. Re-stitching the urban fabric provided connections at the Hopetoun bridge and Karangahape Road Bridge to the off ramp. Connections were also made from Hopetoun street to Howe street. The primary connection created is the off ramp itself which serves as a major access point to the CBD from the station and reinstates the lost connections between Karangahape Road and Auckland City.

The rail network and station fills the aims of reusing the Nelson Street off ramp and serving to benefit the entire city region. The introduction of a produce market applied specificity to the Karangahape Road area, as well as addressing freight issues outside of the original premise of obsolescent personal automobiles and embraced an essence of the slow movement and regionalism.

Design of the network played an integral role in the reality of the proposal. The proposed rail network services the majority of Auckland population, as well as the central city with a loop that runs frequent trains and includes institutions such as University and Hospital stops.

With such heavy space requirements, design methodology of the station became vital to the realization of the project. Having rigid rules and diagraming spacial restrictions allowed for coping with immense difficulties of the site and programmatic requirements. Circulation became the biggest decider, and resulted in a shift from the original platform positioning. The final massed form naturally follows the lines of Spaghetti Junction as it is so restricted spatially, creating a dynamic form which in itself embraces and essence of movement and direction. Simple moves like creating a vertical element on the Karangahape Road bridge as a place marking element and providing a public plaza further emphasize the community servicing aims of the project.

The programme and design responded to the objectives of reusing the Nelson Street off ramp for the benefit of the city. The one option explored in this project provides benefits at numerous different scales, for large portions of society and addresses the problematic issue of obsolescent infrastructure.


“Karangahape Road Online”, www.kroad.co.nz/kroad/history/default.asp (accessed June 7, 2012)

“K Rd bridge revamp slated”, The New Zealand Herald, September 1st 2011


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