

## Auckland WaterPark

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### abstract

Like many waterfront cities in the world, Auckland is experiencing the slow but sure transformation of a heavily industrialised and polluted harbour into a lifestyle zone of apartments and marinas.

This paper discusses and illustrates an urban design investigation of the Auckland Waterfront. The paper reconsiders the conventional master plan approach to waterfront projects in favour of a graduated development strategy based on an acknowledgment of Auckland own landscape particularities.

The paper begins with a description of the history of the Auckland waterfront, a description of the present day configuration, and a discussion of contemporary issues. The paper moves on to describe the author's design proposal.

An incremental, phased strategy is suggested. The design project starts by mapping the landscape conditions of the Auckland waterfront. These conditions then intersect with a series of environmental infrastructure measures. Firstly, the collection and disposal of dangerous and toxic fill, found in both contaminated waterfront sites and the adjacent seabed. Secondly, the provision of a series of remediation zones to actively clean and filter polluted storm water before discharging into the harbour.

Utilising the time frames of the native ecology, the waterfront is gradually transformed into a network of localized ecotones. Opportunities for an active social engagement with these new sites and their newly formed connection to city and harbour are revealed and exploited. A cultural infrastructure is gradually inserted into this social and landscape network. Of course the unavoidable accouchements of 'waterfront city' cannot be denied but there location can create unfamiliar but potentially rewarding juxtapositions with the new landscape.



A case study of the Queens Wharf is developed in detail to reveal how the initial mapping and environmental remediation strategies can be developed through an engagement with the techniques of garden making. In this case study, garden making is used as an instrumental, directive force to act on the newly discovered landscape conditions.

Gradually a unique urbanism is developed which eschews the traditional urbanism of Europe and North America. Moving beyond the limitations of the traditional fixed master plan, the Auckland WaterPark project demonstrates a fluid and moving development strategy, which acknowledges the time of both landscape and city.



## Auckland Waterfront—History

Auckland, New Zealand's largest city is located on an isthmus between two harbours, the Manukau and Waitamata. The centre of Auckland is located on the southern side of the Waitamata harbour, near the entrance to the Hauraki Gulf. The CBD is the usual mix of modernist towers mostly clustered around the central street of Auckland, Queen Street. Queen Street lies in a valley, a typical feature of the topography of this area, which is made up of a series of undulating bays and headlands, connected to ridges and gullies running from north to south.

Before human habitation, the original flora of this littoral was a complex mix of ecotones spread over an intertidal region of fresh and salt water.

The first human settlement of the Tamaki / Auckland isthmus was by Maori.<sup>11</sup> Their occupation of the Waitamata followed the existing geography, with iwi, small family based groups, settling in the bays with easy access to kai moana (sea food). Pa, fortified villages constructed by terracing the existing topography, occupied the headlands.

The area, which is now occupied by central Auckland, was a fragment of this typical terrain. Two parallel ridges, with two pa located at the ends; Te Ngahuwera to the west and Te Rereanga-orati to the east. The Waihorotiu Stream ran in the gully between the ridges out to Horotui Bay.

In 1840, the English Lieutenant Governor, William Hobson, aided by the Surveyor General, Felton Matthews, chose Horotui Bay as the site of a new capital city, to be named after Hobson political patron, Lord Auckland<sup>22</sup>. The Ngati Whatua Chief, Te Kawau, gifted 3000 acres to the Crown, and a flagpole was erected on Te Rereanga-orati on the 16<sup>th</sup> of September 1840.

Early European occupation followed a similar pattern to Maori settlement, with buildings spreading out along the bays; the European names clearly denoting the new uses and status of the bays.

Horotui Bay became Commercial Bay, to the east; Te Rereanga-orati was renamed Point Britomat, then came Official Bay and Mechanics Bay. West of Commercial Bay was located Freeman's Bay, then St Mary's Bay.

As Commercial Bay developed, the first street was formed, Shortland Street, connecting the bay to Pt. Britomart. Here on rising ground, were situated Auckland's first businesses, at the Point, a barrack was built, and behind that, Auckland's first church, St Paul's. Princes Street was built along the ridge connecting the barracks and church with Government House, the seat of the English viceroy and later the location of Auckland merchants.

The Waihorotiu Stream became Auckland first sewer, this was gradually enclosed to become the Ligar Canal, formed the base of Queen Street, Auckland's first shopping street.

The Port of Auckland started with the first wharf, located between Official Bay and Mechanics Bay in 1851. The Queen Street wharf, located in Commercial Bay, was started in 1852. Colonial Auckland also used reclamation to construct the port, a method that still continues today.

The first major reclamation was the filling of Commercial Bay and the construction of a new street, Customs Street, to front the waterfront. The fill came from the demolition of Pt. Britomart in 1870. Reclamation continued in Commercial Bay with a further extension to a new waterfront edge, which became Quay Street in 1890.



Freeman's Bay was reclaimed from 1886–1917; this area was developed as a new recreation ground, Victoria Park. To the north, new reclamation was constructed in the 1930s, which became the Western Reclamation.

Mechanics Bay was reclaimed from 1872–1915, this area became the site of extensive railway infrastructure for both passenger and port transport. Further reclamation and wharf construction took place in this area with the building of Jellicoe Wharf in 1950, Freyberg Wharf in 1961 and the first container port, Fergusson terminal in 1971. Bledisloe and Kings Wharf were amalgamated in 1985 to form the Axis Bledisloe container terminal.

The building of the harbour bridge and approach infrastructure in the late 50s was responsible for the reclamation of St Mary's Bay. To the north of the new bridge onramp, a large marina was built, Westhaven.

### Auckland Waterfront—the present day

Despite the 150 years of urbanisation, Auckland's CBD still retains the original topography of hills and gullies, however the original landscape of bays has disappeared under an extensive 'apron' of reclaimed land.

Auckland's waterfront now can be divided into roughly two parts; to the west, a mix of marinas, ships industry, and storage facilities, to the east, the extensive wharf infrastructure of a working port.

It is in the centre of the waterfront, in the lower Queen Street area, that new, non-port developments have begun. The first of these was the development of Princes Wharf in the early 90s. The overseas terminal and port warehouses were converted to an apartment and hotel complex. To the west of this wharf was located the fishing boat harbour. The second waterfront development was the transformation of this area into the Viaduct Basin.

Driven by New Zealand's victory in the Americas Cup, a ten-hectare redevelopment of the basin was initiated. The Roma Group developed the initial master plan. Based on a new urbanist model, the plan envisioned a grid of 4–5 story buildings to replace the aging port buildings and fruit and vegetable market. Public space was provided by a promenade along the new waterfront with the provision for a civic plaza in the centre of the new waterfront promenade. The public infrastructure of the Basin was completed in 1999; the area has now been fully built out with a familiar mix of apartments, bars, and restaurants.

Future plans for the Auckland waterfront confirm a west/east separation on the Queen Street axis. Port development and activities are to continue to the east, while the new waterfront of apartments and offices is planned to gradually occupy the western part of the waterfront.

### Auckland Waterfront—issues

A number of important issues have developed in the course of the sixteen years of new urban development. One interesting issue is the popular reaction to Viaduct Basin development.

The Viaduct Basin waterfront development exhibits all the generic characteristic of 'port town'; the promenade around the water, the historic sailing boats, the public art programme, the ubiquitous bars, restaurants and apartments. Only the height of the surrounding buildings informs



us that we are in Auckland rather than the Melbourne Dockland. While public space has been provided, its actual use as a communal realm is problematic. With the construction of expensive new apartments, residential groups have become influential in imposing a suburban like calm on adjoining civic spaces.

In the present debate over the proposed development of other parts of the Auckland Waterfront, citizen groups have expressed concern that this scenario is not repeated. One popular suggestion to ameliorate the generic waterfront city model is to ensure that a greater proportion of any future development is devoted to public space. In particular, the provision of a large-scale public park in any new waterfront development has been proposed and enthusiastically endorsed in the popular debate.

Another important, although not as well publicised issue, is the problem of pollution. The Auckland waterfront is still a highly contaminated landscape. Untreated and heavily polluted stormwater enters the Waitamata from the three catchment areas of the CBD; Freeman's Bay, Queen Street and Parnell. After heavy rainfalls highly visible and toxic plumes can be clearly seen from the waterfront. There are also areas of major site contamination. The most important terrestrial zone is the petro chemical contamination of the Tank farm, an area within the Western Reclamation. The other major site contamination is polluted marine sediment, the legacy of over one hundred years of antifouling and other ship industry detritus.

## Remediation

One of the best-accepted practices for cleaning and remediating contaminated marine sediment and contaminated fill is to use Phytoremediation. This is a process where plants are used to remove harmful chemicals from polluted ground. Firstly, existing marine sediment is dredged and collected. *Salix* and *Populus* species are then planted in the contaminated fill; certain pollutants are drawn into the trees system, gradually removing the harmful contaminants.<sup>33</sup>

The remediation of contaminated stormwater is a better-known process. Stormwater is collected and cleaned through a number of processes including filtering through vegetation, to remove harmful pollutants before being released into natural watercourses, streams, or the sea<sup>44</sup>

## Auckland Waterpark Design Proposal

### *Introduction*

The contemporary Auckland waterfront presents a number of seemingly irreconcilable issues; the transformation of an industrial marine environment, the requirements of real estate development, the public desire for genuine public space, and the necessity for a remedial environmental infrastructure.

The author has developed a design project, which starts to address these disparate issues by avoiding traditional urban design solutions. Instead, the project, Auckland WaterPark, starts by reconceptualizing the Auckland's waterfront as a landscape rather than a city.

The development of the project fall into two parts, the first examines the whole of the Auckland waterfront and develops a new kind of urban design methodology based on a study and privileging of existing landscape conditions. These conditions are then intersected with environmental remediation techniques to help ameliorate the serious environmental degradation of the waterfront.

The second part of the project looks at one part of the waterfront, the Queens Wharf. Here the proposal is deepened by exploring the idea of garden making as a way of giving an active design direction to the landscape discoveries made in the first part of the project.

### *Design process*

- 1 Mapping the existing and conjectured landscape conditions using a GIS programme, ArcView.
- 2 The construction of design process using GIS techniques to both represent landscape conditions and model future development and interactions.
- 3 The privileging of the landscape over other conditions such as architecture or conventional urban design.
- 4 The intersection of mapped landscape conditions with environmental remediation techniques.

### *Mapping*

To rethink the waterfront as a landscape necessitated an analysis of the existing topography of the CBD and Port. The project found three landscapes; the first is the existing landscape of ridges, valleys, and the reclaimed land of the waterfront infrastructure. The second is the hydrological landscape of freshwater, stormwater, and saltwater, governed by tidal movement and rainfall. And the third is the historical landscape of native ecotones.

To make these landscape visible necessitated finding a way to represent them, their possible manifestations and any congruencies with environmental operations. Using a GIS programme, ArcView, the project redrew the Auckland waterfront as topography, both terrestrial and submarine. From this terrain other maps were developed; Aspect, the direction that the terrain of the waterfront has to the sun, Hill Shade, what part of the terrain is in shade, Slope, where do the steeper and shallow slopes exist, and Hydrology, where do overland flow paths occur.

This analysis revealed a fundamentally different view of the city than that revealed by conventional urban design analysis. Reconceptualizing the city as something larger than building and the spaces they enclose, opens up a process, which can fold in complex social and environmental issues that are often elided in more conventional analysis and design

### *Combination of landscape maps with remediation techniques*

The next stage of the project was to map the intersection of the new landscape conditions with ecologically timed remediation processes; to generate a new landscape based development strategy.

### *Remediation of contaminated marine sediment*

The slope diagram was analysed, the steepest areas were 'buffered' or enlarged. These areas were identified as places where dredged marine sediment could be located. Some of these areas are on land; some on man made structures, like wharfs, some on the actual seabed. The areas located on the seabed are built up by using existing reclamation techniques, mixing dredged marine fill with cement, to form a stable platform above sea level. Further dredged fill can be placed on top of this platform.

All the areas where the dredged fill is placed are planted with *Populus* and *Salix* species. After two years, these trees are gradually harvested and replaced with indigenous species from the local coastal cliff eco tone including; *Pohutakawa*, *Metrosideros excelsa*, *Karo*, *Pittosporum crassifolium*, *Taupata*, *Coprosma repens*, *Houpara*, *Pseudopanax lessonii* and *Astelia banksii*<sup>5</sup>.



### *Remediation of contaminated stormwater*

The overland flow path map combine with the existing exit points for the stormwater of the three CBD catchment areas. This new map points to the location of stormwater remediation treatment areas. The area necessary for the treatment of the stormwater is formed either by the deformation of existing reclamation or by the formation of 'atolls' through the construction of the phytoremediation terrain on the existing seabed. Behind this new topography, the seabed of the 'lagoon' is raised to form a sloping gradient from the stormwater outlet to the sea. The lagoon is constructed to allow for the standard remedial stormwater treatment using indigenous wetland planting such as; Raupo, *Typha orientalis*, *Baumea articulata*, and *B. rubiginosa*. The 'atoll' wall is shaped to allow the natural tidal flows to both flush and receive the polished stormwater.

### *Restoration of saltwater ecotone*

The northern-faced areas in the aspect diagram are chosen as the best areas for the restoration of the native salt marsh and meadow, once a common eco tone in this region. The topography of the northern-faced areas, wharf or reclamation is physically deformed to allow for the tidal flow. Selected species such as Oi Oi, *Letocarpus similis*, Sea rush, *Juncus maritimus*, *Cyperus ustulathus*, *Isopletus nodosa*, *Baumea juncea*, Glasswort, *Sarcocornia quinqueflora*, Makoko, *Samolus repens*, and Remuremu, *Sellicans radicans* are planted in these areas.

The construction of the three new landscapes; the phytoremediation terrain, the building of the remediation wetland and the construction of the salt meadow/ marsh, sets in motion an interplay between the growth of different species with the rhythm of stormwater flows and tidal movement. The three landscapes are interconnected, treated stormwater flows through the fissures in the phytoremediation mounds and over the restored wetland habitats.

This new ground is a temporal landscape, an environment governed by ecological processes that are both opened ended and latent.

## Building Programme

It is within this new terrain that opportunity for developing new building programmes can occur. Initially the new landscape acts a little like a constraint diagram, building platforms occur in the spaces left over from the landscape operations. Their functions are resolved in a 'Dutch' manner, that is, as a pragmatic real estate calculation. However the project suggests that while a functional programme may well be the first response to the new sites, the unavoidable adjacencies of building programme with three powerful new landscapes will inevitably generate an unprecedented urbanism. Apartments next to remediation wetlands, art galleries beside salt marshes, and cafes by phytoremediation mounds. This project suggests that the social communality of the new buildings and social possibility of the new landscape, will lead to a connectedness between architecture and landscape, generating a rich and unique urbanism.

The Auckland WaterPark project demonstrates that by opening a project up to the temporal and local landscape, a richer, open ended process can be engaged with, rather than the stasis of the master plan.

Connecting to the multitude of sequential rhythms that the landscape generates, plant growth, contamination rehabilitation, tidal movement, overland flow paths, helps to connect the city to the

temporal particularities of the site. Environmental rehabilitation is no longer ignored or treated as something separate from the city, but as an integral part of its development.

The building programme, while following the contingencies of real estate speculation, can avoid the banality of the neotraditionalist model.

## Auckland Waterpark Case study—Queens Wharf

### *Introduction*

The first part of the Auckland WaterPark design project addresses the first two concerns that were outlined at the beginning of the paper.

How to develop a new model of urban development that avoids a generic waterfront urbanism and how to ameliorates serious environmental pollution.

However the project could be critiqued as simply a neofunctionalist strategy, where the design is the result of a particular process, a *fait accompli* with no possible equivocation because of an ecological alibi

The Auckland WaterPark project aims to move beyond this purposeful and efficient attitude without resorting to the strategy of the 'deliberate hand'. The project seeks to retain the openness and possibilities demonstrated by the use of the ecological cycles of the new landscape. The project also values the unexpected juxtapositions and intersections between these new rhythm and those of the city. To explore in greater detail these possibilities, a case study site has been chosen, Queens Wharf, in the centre of the Auckland waterfront.

### *History*

Queens Wharf is a critical site in the Auckland waterfront. It is located on the original site of Auckland's largest wharf, the connection of New Zealand to the outside world. In the 19<sup>th</sup> century, the wharf formed a contiguous surface with Queen Street, acting as both an infrastructure link to the interior of New Zealand, for the export of raw materials, and as the port for manufactured goods from England. It was also the city social space, as shown by the presence of innumerable strollers and layabouts in almost every image.

This connection was cut of by construction of Quay Street and Customs Street, and the privatisation of port activities.

### *Queens Wharf—present day*

However the southern end of Queens Wharf still has a busy social programme. Starting with the arrival of the commuters on the cross harbour ferries at eight thirty am, the space at the intersection of Queens Wharf and Quay Street is busy with officer workers at ten, twelve and three o'clock. The commuter rush starts again at five pm. At night the waterfront becomes a party zone with hundreds, descending on the waterfront, in particular, the bars and restaurants of Princes Wharf and the Viaduct Basin.



### *Queens Wharf—issues*

The future of Queens Wharf is part of the contemporary urban debate in Auckland. A number of social, civic, functional, and real estate goals have been articulated.

One of the most important is the possibility of a new civic role for the wharf. With the recent extension of Queen Street to Quay Street and the transfer of heavy port activity, there is a new possibility of linking the public space of Queen Street to Queens Wharf. Two possible scenarios could develop from this situation.

The first is the possibility of a contiguous link from Queen Street to the northern end of Queens Wharf and the connection of this site to the sea. Some possibilities that have been mooted for this northerly termination are; a civic plaza, a great stair, or an important public building.

Other possibilities that have been discussed are; the moving of the exiting ferry transport network from its present location at the southern end of Queens Wharf. Suggestions have been made that this infrastructure could be located towards the end of the wharf.

As in most development of contemporary public space, any building would have to be self-funding. This will mean the provision of a real estate programme of apartments, offices, shops, restaurants and clubs.

The deliberate generation of 'events' is also a critical part of the modern city infrastructure. Barcelona has lead the way by inventing the idea of urban development through event staging; starting with the Olympics and finishing most recently with the Barcelona Forum. Queens Wharf could offer many possibilities for event staging, from large-scale civic occasions; such as the Americas Cup and Auckland Anniversary day, to the provision of an informal event infrastructure.

### *Queens Wharf Design Proposal*

The case study design begins by developing the data from the Auckland WaterPark project to the Queens Wharf area.

We can see in detail the results of the intervention of the three new landscapes on the existing wharf infrastructure.

#### **Phytoremediation terrain**

Reclaimed land forms a mounded topography between Princes Wharf and Queens Wharf and Queens Wharf and Captain Cook Wharf. This new topography undergoes a programme of phytoremediation over a number of years; the eventual goal is the restoration of the spectacular indigenous pohutukawa forest.

#### **Remediation wetland**

Behind this new terrain is the stormwater treatment area, the remediation lagoons. They have their own particular timetable of plant growth, but also a diurnal rhythm of tidal movement, rainfall patterns and cleaning cycles. **Salt meadow/ marsh**

In front of the coastal forest terrain is a strip of newly created salt marsh, a complex horticultural buffer zone to the tidal movement. This strip cuts the existing Queens Wharf structure into two



### *The garden*

The next part of the project seeks a way to assemble and direct the complex landscape conditions and processes. To develop the project beyond environmental restoration and rehabilitation, the project is searching for a technique that can actively intervene and direct these processes. Why? Because the project at this stage seems to be driven only by a pragmatic logic; the simple functional necessity of cleaning so many litres of contaminated stormwater and so many cubic metres of contaminated fill, combined with the necessary real estate requirements to pay for the projected development.

To develop a prescriptive methodology that leads the project beyond a neoMchargian functionalism, the project looks to techniques associated with the making of gardens.

What have gardens got to do with large-scale environmental design or major waterfront developments?

The way we traditionally construct a garden involves designers making active and instrumental decisions that directly intersect with topographic and horticultural conditions and rhythms. We call these procedures gardening; they result in enclosure, the marking of a boundary, and a delight in the horticultural specimen. Garden making techniques also address the social. The construction of a garden must satisfy complex issues of movement, use, and utility.

These gardening tropes, now as rigorously codified as ancient tribal practice, owe their existence to J.C. Loudon's tireless writing, where he exhaustively codified the rules for the making of the modern garden.<sup>66</sup> One important observation of Loudon's is that the technique of garden making is a system of social adaptation and landscape distinction.

Loudon's writing can help us to identify the connections that exist between the natural world and the garden. How these connections are negotiated, modified, adapted, yet never completely sundered, is highly instructive, as we consider the functional maps and diagrams that have been developed.

Giving these maps an active intention, the project can engage in the sense that gardening can help the design work develop a capacity for deliberate action when confronted with the landscapes of topography, flora, and water.

Loudon's prescriptions also offers us insights into how the complex social agencies of work and pleasure, that are already present on a site, can modify the functional programme of the landscape that has been developed.

The project proposes to take Loudon's techniques for the mediation of the natural world and the social life and abstract them from Victorian domestic ideology, by considering these ideas as techniques. We admire the direct and unforced directionality that the techniques present to us, their possibility for an active and engaging instrumentality, and we propose to use them with the larger landscape conditions that we have both discovered and developed.

### *The native garden*

Loudon's writing proposes the formation of a gradient, a gradient of horticultural and topographic difference. This can take many shapes; the difference between indigenous and exotic flora, between native and canalised water, and between raw and artificial topography. For example, in what ways



could the proposed indigenous landscape present in the phytoremediation mounds, be modified to show distinction?

One possibility, inspired by Loudon's writing, is that a differentiation with native species could be marked through the introduction of exotic species. A more subtle graduation could be the development of a gradient between native species and their Gondwanaland cousins. For example, *Metrosideros* is a genus of trees native to the Pacific islands. New Caledonia has seven endemic species, Hawai'i has five and New Zealand four. *Leptospermum* is another Gondwanaland genus, more commonly found in Australia, although there are two species in Malaysia, and one in New Zealand (Tea Tree, *Leptospermum scoparium*). Other common Gondwana species are; *Dacrydium*, *Dysoxylum*, and *Weinmannia*.

Gondwana species could be planted in the public area of the new reclamations as specimens and accompanied by particular topographical treatment. This region could gradually shade into the indigenous example of the particular species.

### *The social garden*

The first step is to understand and use the existing and conjectured social programmes on the site. We can do this by mapping the present social movements through the day and night and new social movement patterns that are occasioned by both the new landscapes and the new social programmes.

The results can be broadly divided into two groups. The first are movement patterns, north/south, from the city to the end of Queens wharf. The second are movement pattern east/west; this has largely been generated from the new phytoremediation terrain.

What happens when the new ecological landscape, conjectured social programme, and real estate interest converge? What are some ways in which the potential social programme might adapt to the proposed landscape and building programme?

Some scenarios are; Commuters who use the Auckland ferry system need to move smoothly and rapidly into the city. The desire for a contiguous link from water to city plus the functional desire to link transport terminal to city could result in the provision of a tram /people mover along the wharf and through Queen Street.

The second example is the social evening scene, the heavily used waterfront becomes a dense throng of clubbers and partygoers, moving from bar to bar, club to club. The new Queen Wharf could provide a party infrastructure for informal events; sound systems, bars, and toilets that can be plugged in and just as easily dismantled.

The third example is, access from Queen Street to the end of Queens Wharf and the social desire to swim in the newly cleaned harbour could lead to a topographical deformation of the wharf to form a 'beach' to allow swimming and water based activities.

The movement/activity diagram isn't confined to the ground plan but can be mapped in three dimensions, as a series of strata. Each stratum is connected to the ground with a common service core and the exigencies of the structure grid, but other wise free to develop their own form according to their particular functional or social programme. Office/apartment combinations on one floor, a shopping street on another, and a Museum of Pacific Art, are all possibilities.



## Summary

The gardenised landscape offers a solution to the second contemporary critique of the Auckland waterfront development. The Queens wharf case study project demonstrates that it is possible to move beyond the current 'waterfront city' design paradigm, the generic model where an architectural framework borders a limited typology of public space.

The rich yet practical forces that were discovered and explored in the first phase of the Auckland WaterPark projects can move beyond a pragmatic process. By considering the intentional practice of garden making, the moving world of ecological processes and remediation strategies, can be given direction. Here the richness of the chronological environmental patterns flows into a similarly richly phased social programme to produce a tremendously wide range of outcomes.

Garden making offers a rich and complex range of deliberate motives that can make unexpected yet real connections between such disparate subjects as buildings, ecological cycles, indigenous flora, and urban life. The act of garden making creates an opening into these seemingly autonomous worlds, allowing them to percolate into each other. The results are strange, unprecedented and open to further change and development. °

## Endnotes

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