A Walk in the Park
Airport Inhabitation: Making Place in the Place-less

by

Yan Yuan

Submitted in partial fulfilment of the requirements
for the degree of Master of Architecture

at

Dalhousie University
Halifax, Nova Scotia
June 2020

Contents

Abstract

Airports are nodes of convergence, intersection and divergence. They are processing machines functioning solely to move people from one stage to another in an efficient, expedient manner. This thesis takes the position that the contemporary airport can be a human place that is culturally specific and functional.

The thesis first studies the airport as a system and a non-place. It then analyses the “Room” and system of historical transportation hubs and contemporary airports for clues of place-making. Finally, the thesis discovers the idea of “The Garden” as the method of growing a sense of place. The site for testing the thesis principles is Hong Kong airport. Natural and cultural design elements specific to Hong Kong are integrated into the existing airport terminal, and used to create physical/typological spaces that are human scale and engage the senses. The circulation in the terminals becomes the garden path, and the airport becomes a more connected part of the journey and an extension of the city. Moving through the airport is now – a ‘walk in the park’.

Acknowledgements

To my supervisor Niall Savage and advisor Catherine Venart - Thank you for your guidance and expertise.

To my professor Ken Kan – Thank you for the opportunity to be your teaching assistant and student during my final thesis year; I have learnt a lot from our work together.

To my parents – Thank you for your understanding, endless love, and support.

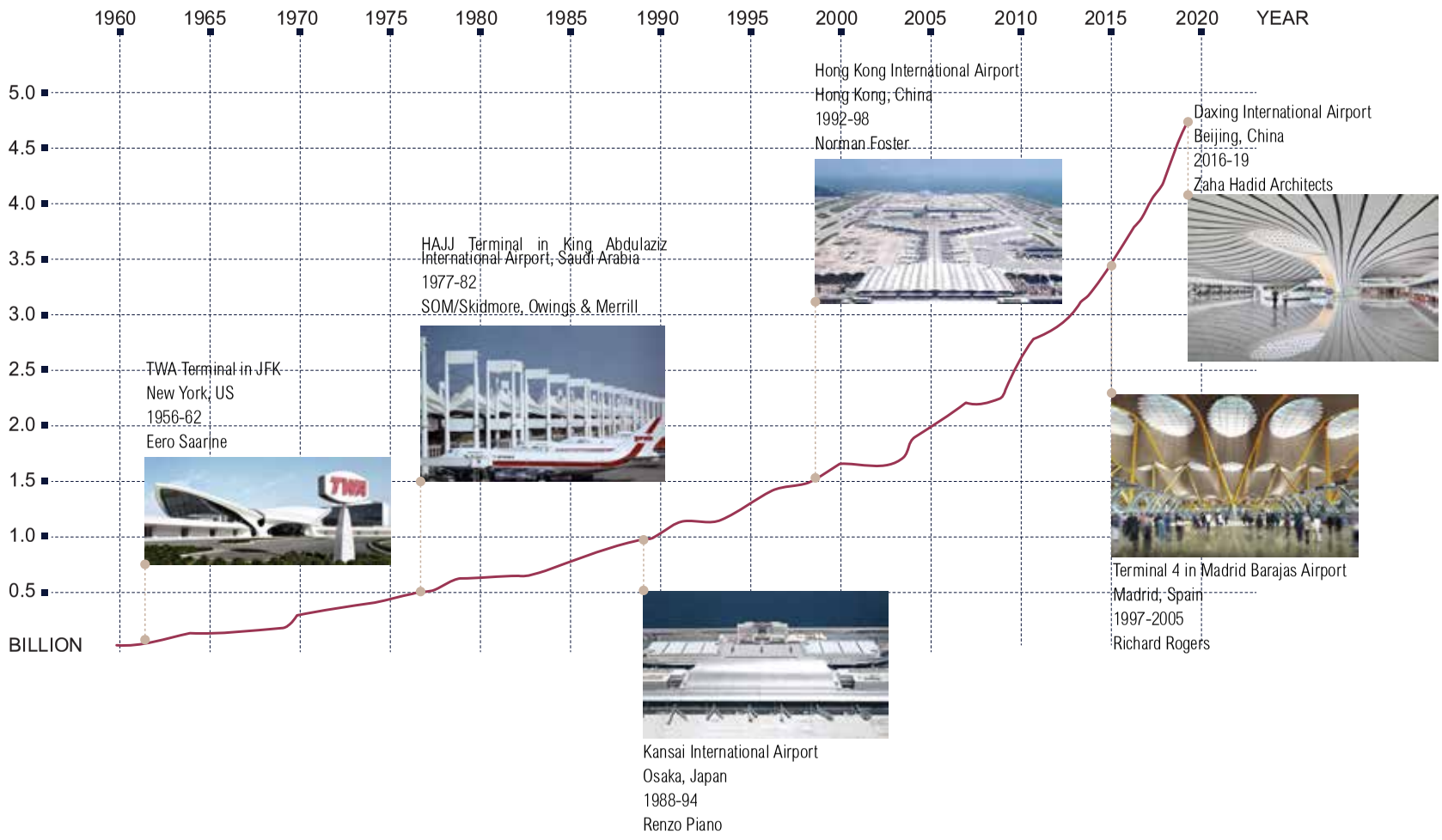
To my classmates and friends – Thank you for inspiring me with your talents and thoughts. Natalie, I would not have been able to get through this special period without you.

To Jeremy – Thank you for being there for me whenever I needed you.

Chapter 1: Introduction

An airport, as a constructed border condition that enables a simultaneous adjacency to any nations/cities, is a node of convergence, intersection, and divergence. Since airports began to provide infrastructure for civilian aviation in the mid 20th century, commercial flying has grown exponentially. With the globalization of the world economy, airports have become international gateways that serve and process billions of passengers a year. When airports were first designed for lower occupancy, architects could focus on creating exciting passenger experience, such as the TWA Terminal designed by Eero Saarinen in 1962. With the development of civil aviation, the airport architecture had to become vast, open spaces often with multiple levels to accommodate the growth of the massive processing number. Especially after 9/11, security took precedence over any other airport function. The heightened security and colossal open spaces made the airport's buildings, system, and operations increasingly sophisticated. A common architectural language for the terminal was developed based on the detailed technical standards to ensure safety and operation in the global scale. Therefore, the terminals across the globe are designed in a similar manner to serve the unified airport system, with less consideration for the human experience. Airports became a processing machine and a "non-place" that solely functions to transport people from one stage to another in an efficient manner. It is like an Amazon sorting facility where people are treated like packages that may contain contraband.

This thesis will weave together sense of place and the airport function system, and discuss how to renovate the existing



Increase in air transport passengers. (data from International Civil Aviation Organization 2018.)

airport in appropriate ways to create a vital place and positive experience for passengers. The thesis first studies the airport as a system, by analysing its functions and defining the gaps where architecture interventions can be placed among the airport sequences. The definitions of Non-place from Marc Augé, Edward Relph, Christian Norberg-Schulz are discussed to explain the spatial relationships between non-place and place in airports Then, it looks to historical transportation hubs, like Grand Central Station in New York, and contemporary airports, such as the TWA Hotel lobby in John F. Kennedy International Airport (JFK), the Terminal 4 of Barajas Airport in Madrid, and the Jewel Changi Airport in Singapore, for clues to place-making and recognizes the importance of the “Room” in successful systems. By discussing the similarities and differences between the airport and the garden, and comparing the garden techniques in Liuyuan garden in Suzhou, Bramham Park in England, and The High Line in New York, the thesis proposes “The Garden” as a means to intervene in the existing airport. The proposal of landscape architecture and garden planning composition to create spaces and experiences can be impactful to its occupants in a positive and memorable way. The Chek Lap Kok Airport in Hong Kong is chosen as a test of “The Garden”. Using gardening techniques specific to Hong Kong and combining natural and cultural elements transforms the circulation in the airport system sequences into a garden path, making the airport a threshold of the city. The terminal circulation becomes a ‘walk in the park,’ whereby passengers do not just arrive and depart, but enjoy spending time without stress or aggravation.

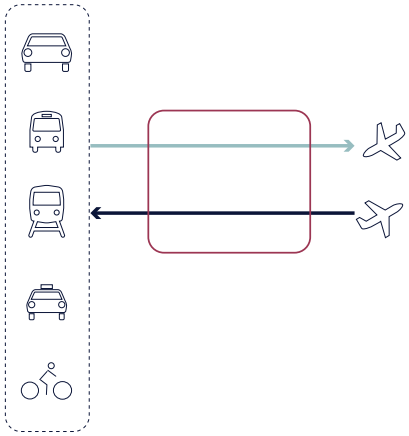
Chapter 2: Airport as a Functioning Machine

The airport terminal is the node in the air transportation system. On the one hand, the programs in an airport are prescribed with tight restrictions, technical analysis, and logistical standards. It is difficult to alter the basic sequence of movement, which is parkade to departure, and from arrival to parkade. Therefore, the terminal architecture has to be designed to accommodate the prescribed sequences of the airport process system. On the other hand, the airport passenger terminal is the largest factor of the airport's infrastructure cost, thus becoming lavish architectural monuments showing regional or national strength. Even with these gorgeous architectural designs, the airports are still a functioning machine and a Non-place, because the design is not integrated into its system.

Terminal Functions

The passenger terminal performs three main functions. First is change of mode; whereby "air" trips are usually mixed-mode trips (Ashford, Mumayiz and Wright 2011, 414). To get to or leave the airport, the passenger needs to take bus, car, taxi, train or ferry. Within the airport, the passengers move through the airport terminal according to a prescribed pattern of movement that changes from one mode to another. . These movement patterns are accommodated by passenger circulation areas. The second is processing of passengers throughout the airport terminal. The terminal is a convergent point to carry out certain processes associated with the air trip, including ticketing, check in, security checks and governmental controls and

Ternimal Function 1



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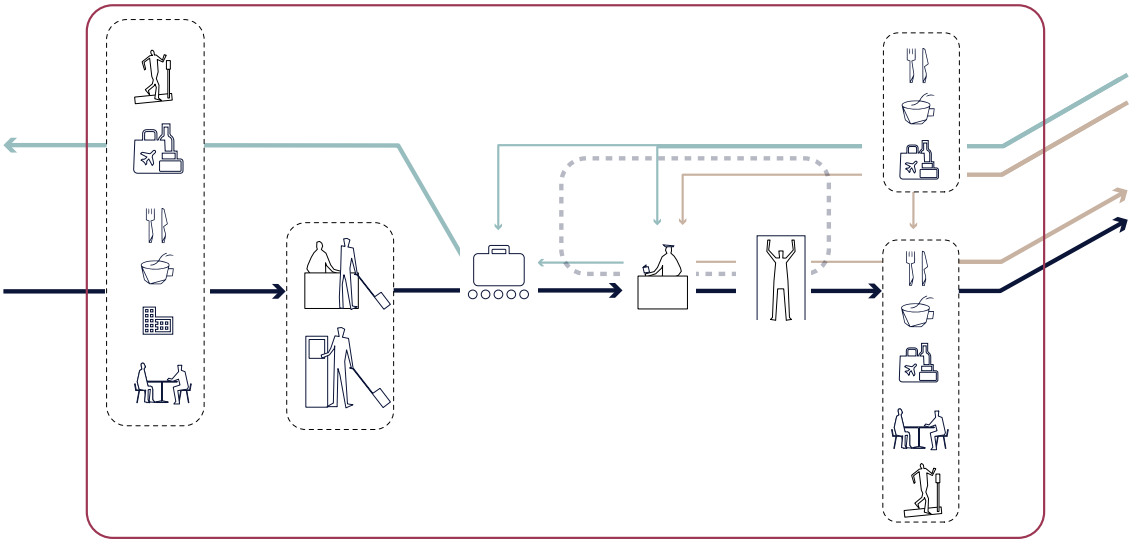
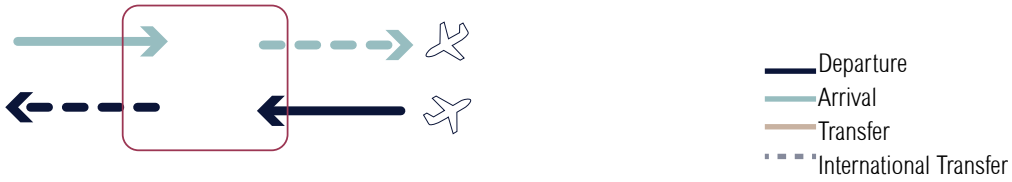


Ternimal Function 3



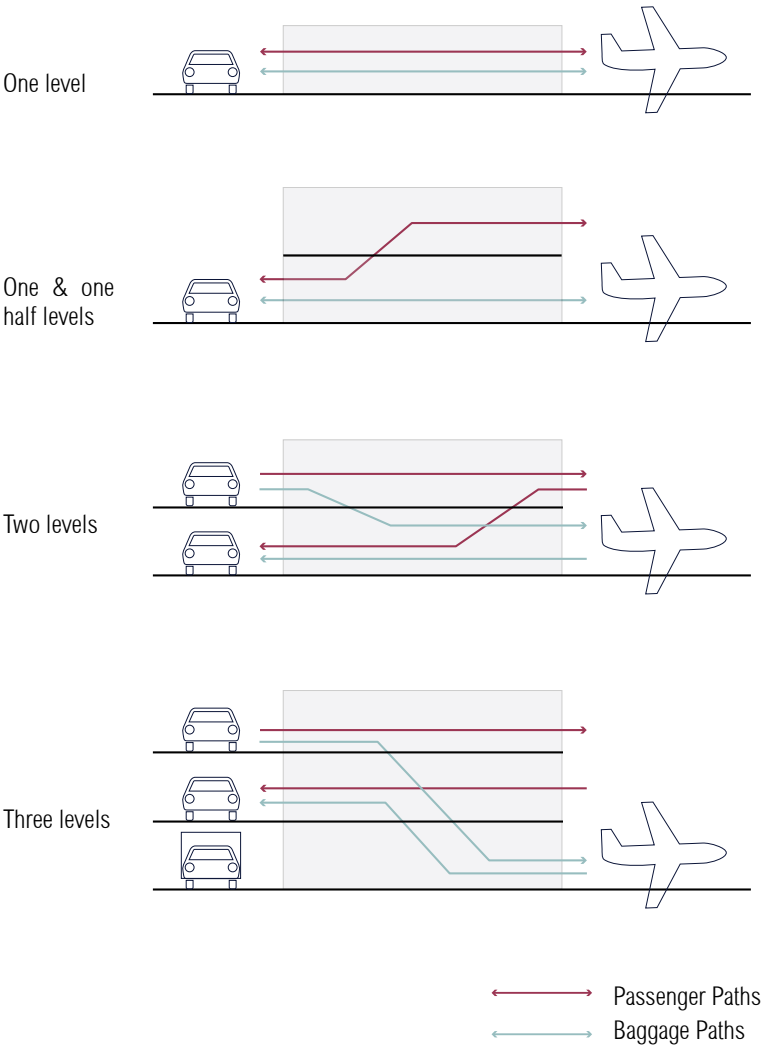
Air transport terminal functions.

baggage claim (Ashford, Mumayiz and Wright 2011, 414). Processing space in the terminal is required. The third function is change of movement type, “batch movements” and continuous (Ashford, Mumayiz and Wright 2011, 414). At the departure side, the terminal functions as a reservoir that collects passengers continuously and sends them on aircrafts in batches. The pattern is reversed on the arrivals side, as the terminal receives passengers in batches from the aircrafts and processes them continuously. The terminal provides a passenger holding space to perform the function on both sides.s.

Vertical Distribution of Activities

There are four main vertical distributions of activities in terminal design: single-level, two-level, one-and-a-half-level, and three-level. The simplest distribution is single-level, which means the passenger and baggage flows are accommodated on one level. It is usually used in small airports when passenger flows are small and there are fewer transfer passengers. When accommodating larger traffic flows, a second level is needed to separate the flow. The two-level operation has two levels of bus and car curbside activity separating arriving and departing passengers on the landside access (Ashford, Mumayiz and Wright 2011, 424). This operation provides clear circulation for passengers, minimizes conflicting flows, and maximizes site utilization. As an alternative of the two-level design, the one-and-a -half-level operation only offers one level for bus and car curbside. This operation has the advantage of the two-level arrangement, but may cause conflicting flows at the bus and car curbside when departing passengers meet the arriving passengers. Some countries require complete separation in departing passengers and arriving passengers who

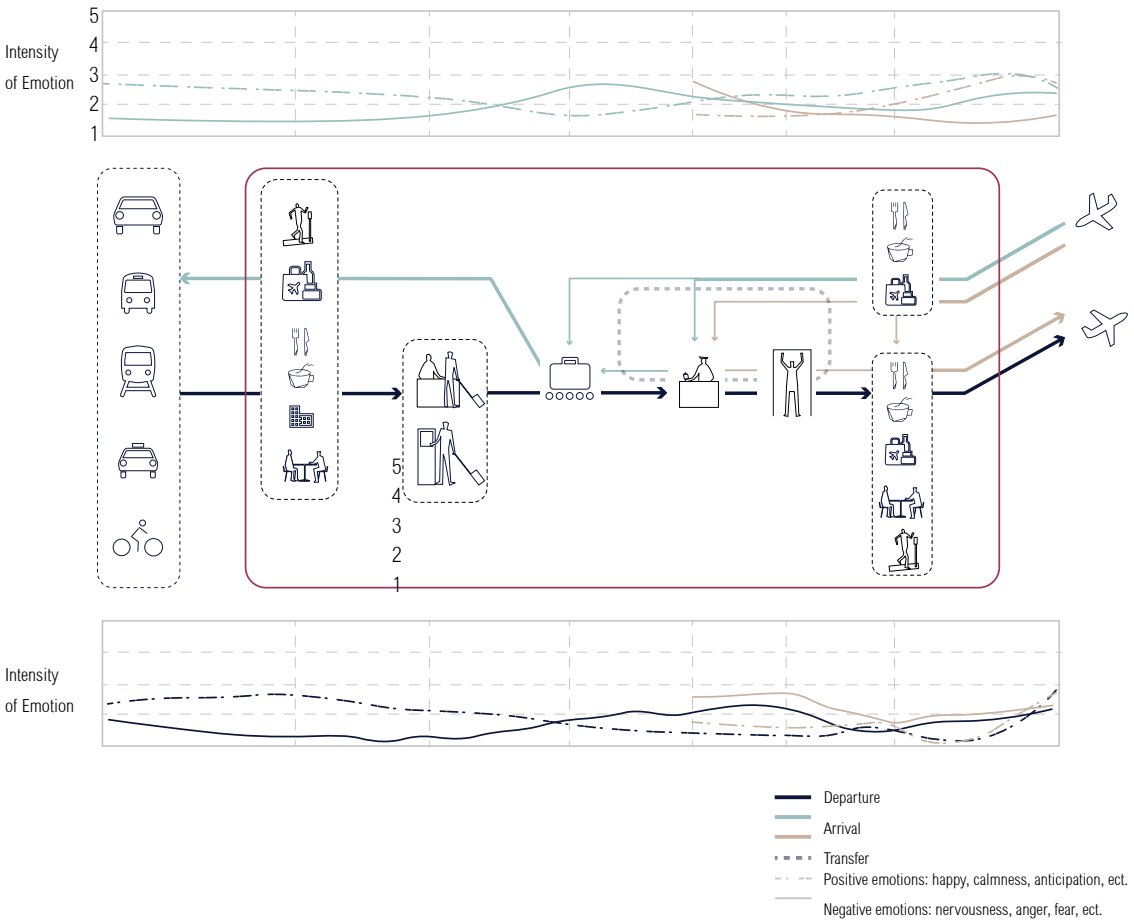
have passed security check (Ashford, Mumayiz and Wright 2011, 425). Two levels of operation or segregation by glass screens are needed in the terminals, which result in larger space for circulation. Some large international airports use three-level design, which separates departures, arrivals, and baggage flow into different levels. In terms of passenger flow, departing and arriving passengers are usually separated into two floors in major international airports, which is the main situation discussed later in this thesis.



Typical vertical separation arrangements of passenger and baggage flows.

Emotional Map

According to the costumer complaint statistics published in Air Travel Consumer Report (The United State Department of Transportation 2018a) and the air traveller survey in Passenger Travel Facts and Figures (The United State Department of Transportation 2018b), the emotional map shows the emotions experienced when passengers traverse through the airport. Although passengers are generally balanced with most emotions, they are happier when they arrive at and leave the airport. The air travellers experience an increase in negative emotions, like fear and anger at immigration and security check. The emotional map will help

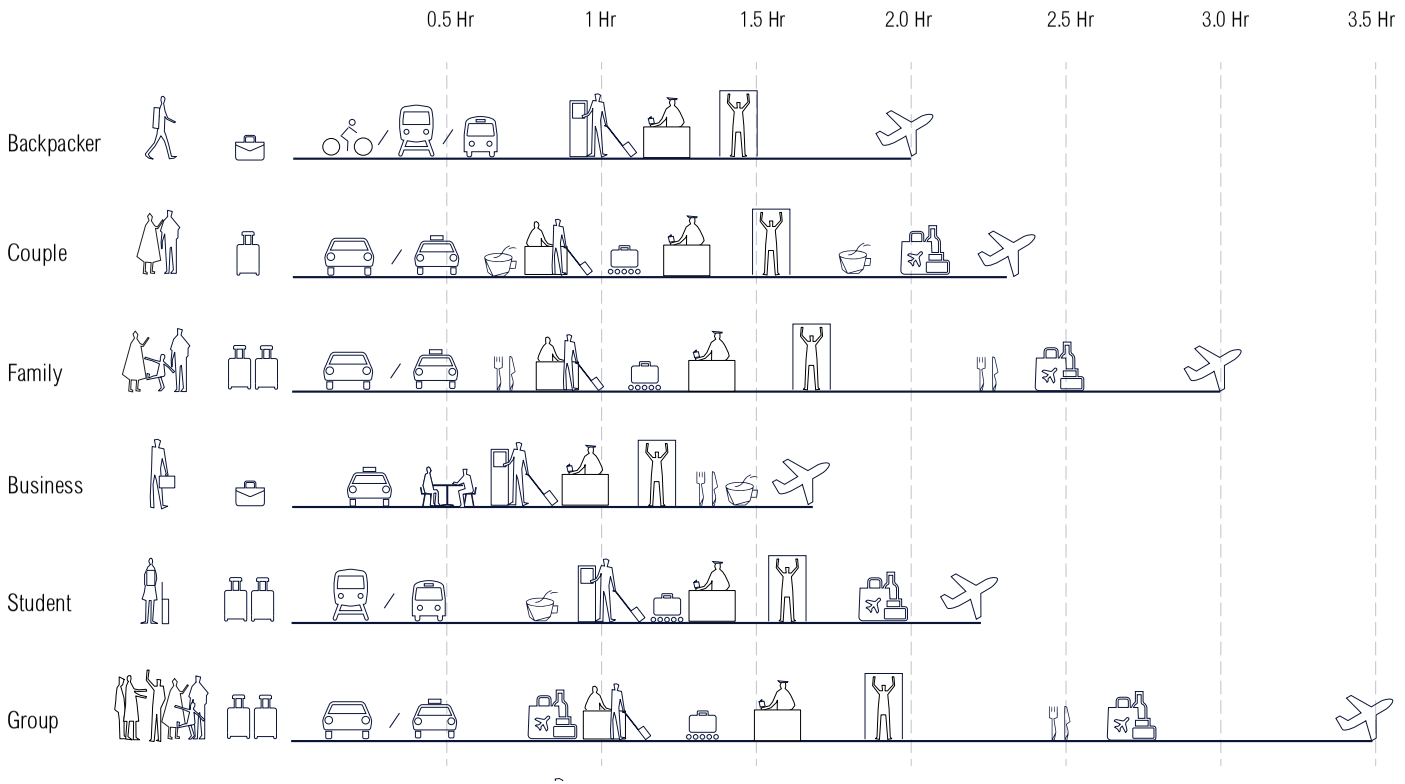


Airport sequences with emontional map. (data from OEAP 2018 and BTS 2018)

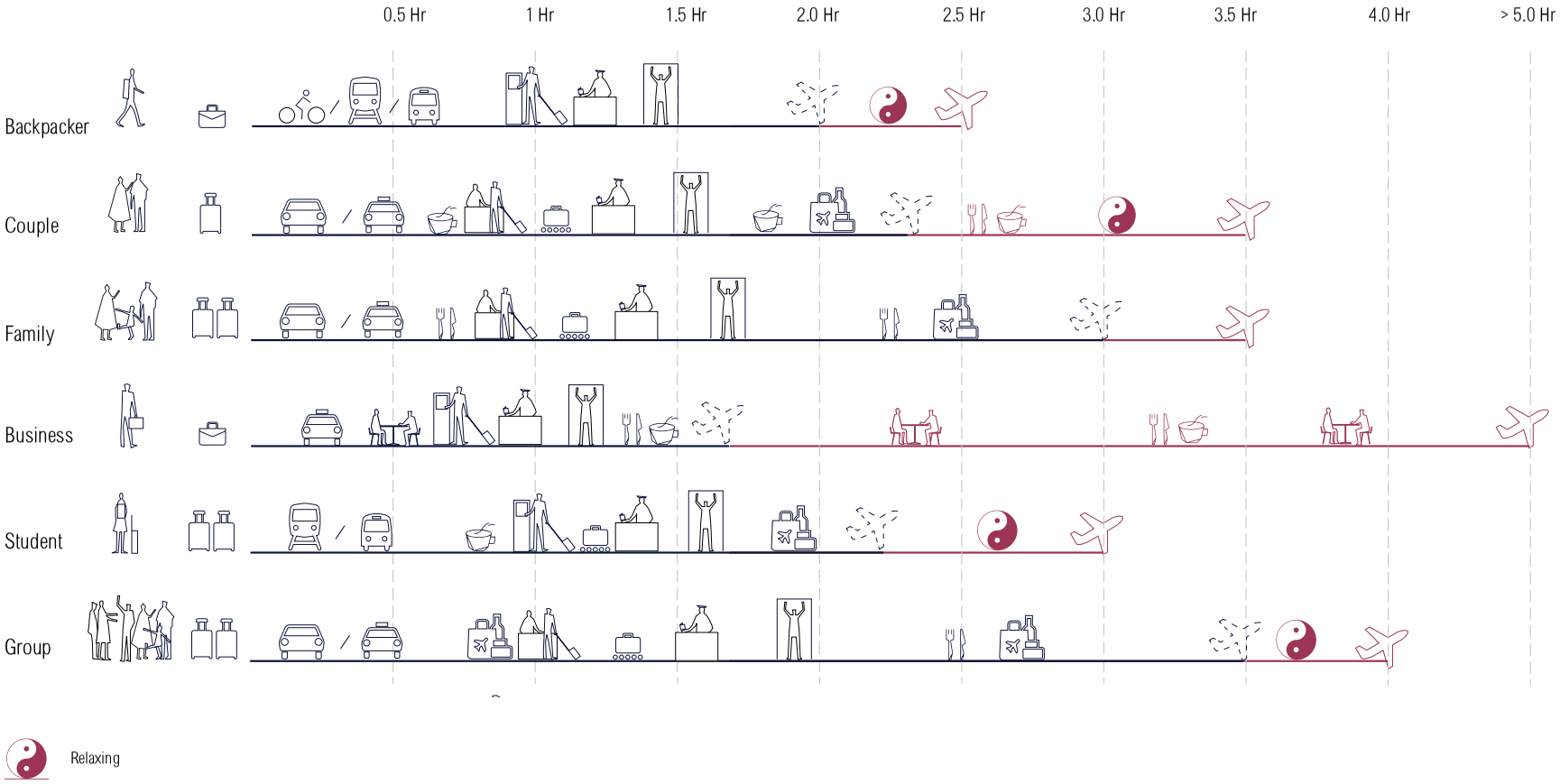
define the architecture interventions among the sequences of airports.

Airport City

With the deregulation, liberalization, and globalization, many airports have developed from just transportation hubs to major intermodal nodes (Ashford, Mumayiz and Wright 2011, 659). Such superstructures became “airport city”, “aerotropolis”, or “airport corridor” that generate urban and economic development in the surrounding industrial area that supports the airport and the networks of the airlines. Most of airport cities are based on economic models and economic development, which is controversial in the fear that airport cities could become generic cities. There are two types of airport city; an urban complex of supporting facilities around the airport and the airport terminal itself, given the large scale and complexity. From the perspective of passenger experience, local characteristics integrated into the terminal can create the feeling of an airport city that is directly related to the context of the destination. This thesis will focus on how to renovate the existing airport to make it an extension of its host city.



Duration and services in airports. (data from International Civil Aviation Organization 2018.)



Increase in air transport passengers. (data from International Civil Aviation Organization 2018.)

Chapter 3: Airport as a “Non-Place”

Airport is not only a solely function machine but also a “non-place”. One of the most important topics that lay the theoretical basis of this thesis project is the concept Place and Place-less, also called “Non-place”. Many architects and designers have realized the importance of place making and attempted to incorporate the sense of place into airport design. Their responses are generally only superficial solutions, such as the rocking chairs in terminal lounge areas in charlotte, North Carolina, as a nod to the culture of the South of the Unite States. The cultural strategy is neither integrated into the terminal building system, nor the airport process system. Especially when other airports from Philadelphia to Boston started to use them out of context, the rocking chairs became meaningless. This thesis attempts to explore architectural interventions integrated into the airport system that indicate to passengers not only the geographic location of the airport, but also where they are in the airport system. This chapter will explain why most of the contemporary airports are considered as a “Non-place” in urban scale, building scale, and human scale. As well as study four transportation hubs to find out what characteristics make those superstructures a “good place”.

Rocking Chairs in Columbia Metropolitan Airport, photograph by Robert Couse-Baker. (Dzieza 2014)

Airports and “Non-place”

Airports and the Context

The common architecture language and the Global uniform design style developed in airport terminals are not related to the airports’ host cities, in terms of history, culture, and geography. It makes passengers not know where they are

when they arrive the airport. According to Edward Relph, Marc Augé, Christian Norberg- Schulz and their definition of place, most contemporary airports are non-place.

Regarding the concept of “Place”, Place and Placelessness (Relph 1976) by the geographer Edward Relph is one of the foremost sources. At the beginning of the book, Relph says, “to be human is to live in a world that is filled with significant places: to be human is to have and to know your place.” (Relph 1976, 1) As a geographer, Relph argues that a place’s identity and character are defined by its landscape. People’s cognition of public places is based on collective experience and joint involvements, and is the sum of human exchanges and relationships. Relph argues that a situation of deep, unself-conscious immersion in a place, termed “Existential insideness,” is a basic human need. Knowing where you belong and where you are is essential part of existential insideness. (Relph 1976, 55) Therefore, a place should have strong senses of identity and safety.

Much like Relph, Marc Augé considers anthropology and place as inextricable. He states a “Place” has three characteristics, which are “places of identity, of relations and of history” (Augé 1995, 52). A strong identity and relations are generally bestowed upon by the community that one resides there. Then, “place becomes necessarily historical from the moment when - combining identity with relations” (Augé 1995, 54). Augé hypothesizes that what he calls “supermodernity” is responsible for creating non-places. Non-places are opposites to places, as they are not individual, relational, or historical.

Norberg-Schulz defines place in a slightly different way than the two authors previously discussed. He uses the Latin

word “Genius loci”, which means “spirit of place”, to discuss the character or essence of a place in his book Genius Loci: Towards a Phenomenology of Architecture. “The place is the concrete manifestation of man’s dwelling, and his identity depends on his belonging to places.” (Norberg-Schulz 1980, 6). According to Norberg-Schulz, when people are fully engaged with and aware of their surroundings in a space, they will find the meaning of existing in that space, which in turn makes it a place. “The identity of a place is determined by location, general spatial configuration and characterizing articulation. “(Norberg-Schulz 1980, 179) Norberg-Schulz makes a point regarding being lost, which cannot happen in a dwelling, because a dwelling space offers a sense of emotional security that makes people feel safe enough and a strong orientation of the space that prevents from getting lost.

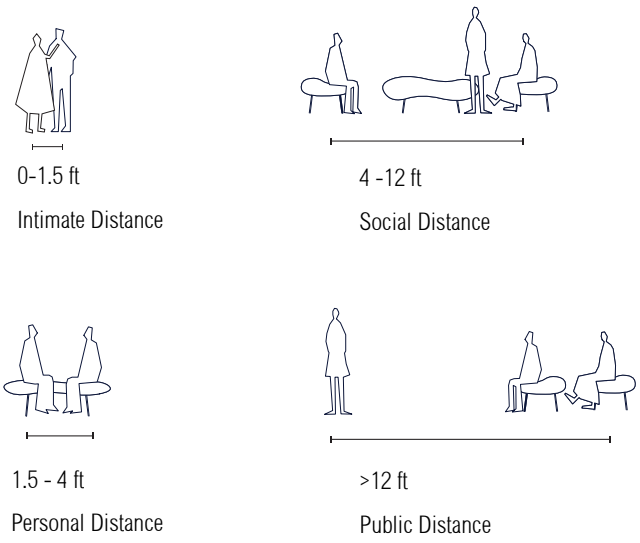
In general, the current image of contemporary terminals is overwhelmingly homogeneous and negative. From the three authors’ definition of “Non-place” or “Placelessness”, one of the reasons why contemporary airports are a Non-place is it makes passengers lack personal security and orientation. The design of contemporary airports is not related to the city in which they are located. Passengers at airports cannot perceive where they are in the world and interact with their previous experience. The global unified design of the airport can only offer the configuration and clarity to show passengers “you are at the airport”. As for which airport, in which city, and where you are going, it does not matter.

Airports and the System

The architecture design in airports focus on the processing system rather than the passengers. The size of the structure, such as long span roof, high ceiling, multiple levels, big openings, are all designed for big groups of people moving through the system rather then considering individuals' experience. The circulation, materials, and lighting in terminals are all set to meet the function of the airport in an efficient way.

Augé uses "Supermodernity" to describe the composed excesses of our world (Augé 1995, 30). The overabundance of changes of scale in space is one of these excesses (Augé 1995, 31, 34). The lack of human scale design in the sheer scale and complexity of terminals is another reason why passengers get lost. According to Relph, other key components of place are "insideness" and "outsideness." When people are inside a place, they are surrounded by the space and thereby become a part of it. Being inside a place means realizing not only the physical location, but also the physical characteristics. Norberg-Schulz discusses place about inside, outside, and their relationship through openings. He makes an argument that "the existential purpose of …architecture is…to make a site become place, that is, to uncover the meanings potentially present in the given environment." (Norberg-Schulz 1980, 18) Therefore, to make the airports a place, the terminal design is to involved passengers into the process system rather than just indicating the physical location. Augé argues in the non-place, the individual feels like a spectator with little attention to the surroundings (Augé 1995, 86). This is opposed to a place as spectacle, in which people fully engage and absorb the surroundings. Augé mentions airport as "non-places

are there to be passed through." (Augé 1995, 104). Since the circulation in the terminal is decided by the prescribed sequences of the airport function, passengers can only reach a predetermined place according to a predetermined route, just like the cargo waiting to be processed one by one. Jan Gehl argues that people tend to walk faster when passing empty or inactive areas (Gehl 2010, 67). Since the contemporary terminals are mainly designed for the airport system operation, a reasonable human scale is missing, and passengers rarely slow down to pay attention to their surroundings. Although huge openings are common in airport design, the mechanically repeated window walls are usually facing the apron without fully engaging the sense of inside and outside. In addition of the cold and unified metal structure of the terminals, along with the uniform metal armrest, tables, and chairs, it is difficult for passengers to interact with this building space. All of the above makes the airport inevitably a Non-place.



Different distance in space affects human interaction. (Gehl 2010, 38)

Airports and the Events

The oversize rooms in airports also cause sensory complexity, especially the overwhelming assault on the sight and the sound that often makes travelers disoriented in airports. The prescribed sequence of activities forcibly divides users into staff, departure passengers, arrival passengers, and the people who see-off or pick up passengers. This division encourages uniformity and limits the possibility of organic social life.

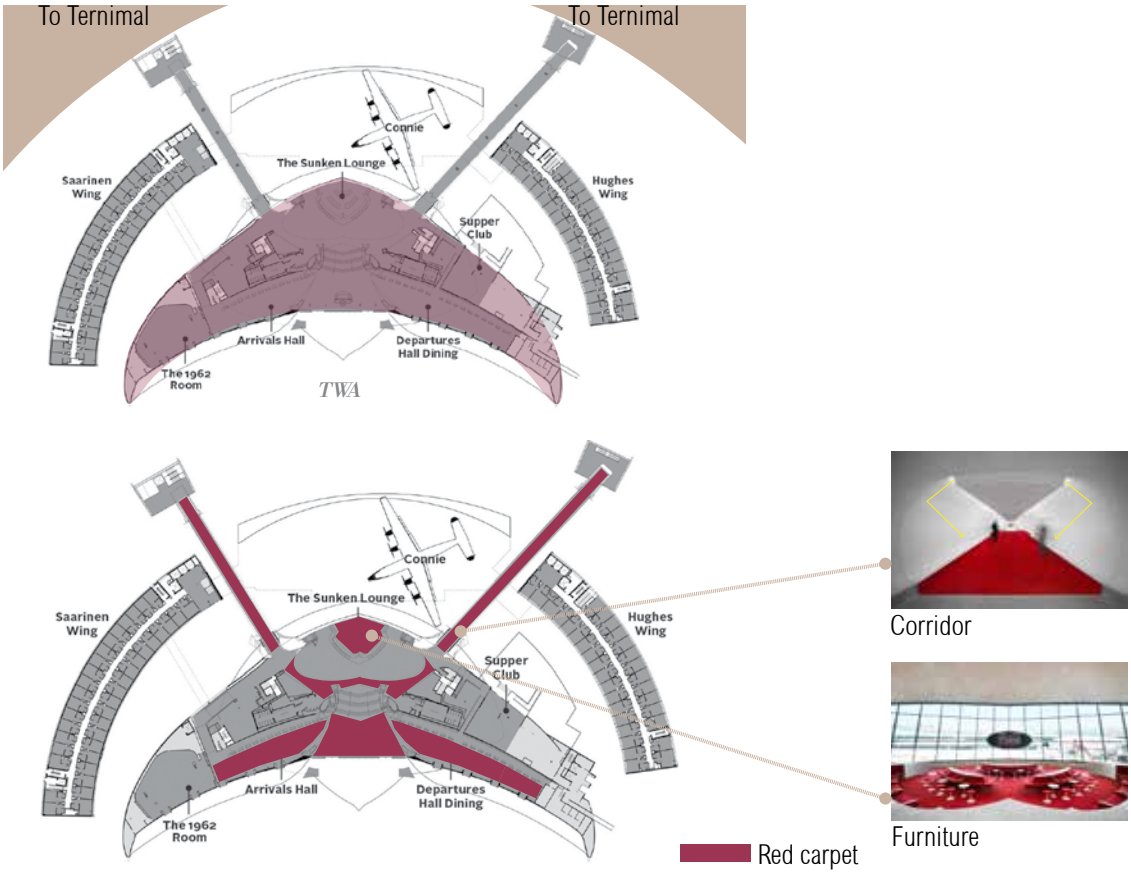
In airports, those nodes of “Supermodern Non-place,” are the points at which the “individual” is most threatened. Since the activities of the airport are limited to the fixed process activities of the airport system and commercial activities, passengers do not interact with the airport space when entering the airport. People in the terminals are constantly bombarded by loudspeakers and interior billboards. After the security check, passengers attempt to escape from the chaotic terminal environment by diverting their focus to personal digital devices. Norberg-Schulz emphatics that the most fundamental need of human beings is to experience their existence as meaningful (Norberg-Schulz 1980, 182). When people occupy places, they are searching for meaning to be in those places. This is another reason that the non-place airports should be turned into a place. The terminals should offer positive events to engage the travelers and live in their memories, rather than being the most negative part of the journey.

Case Study

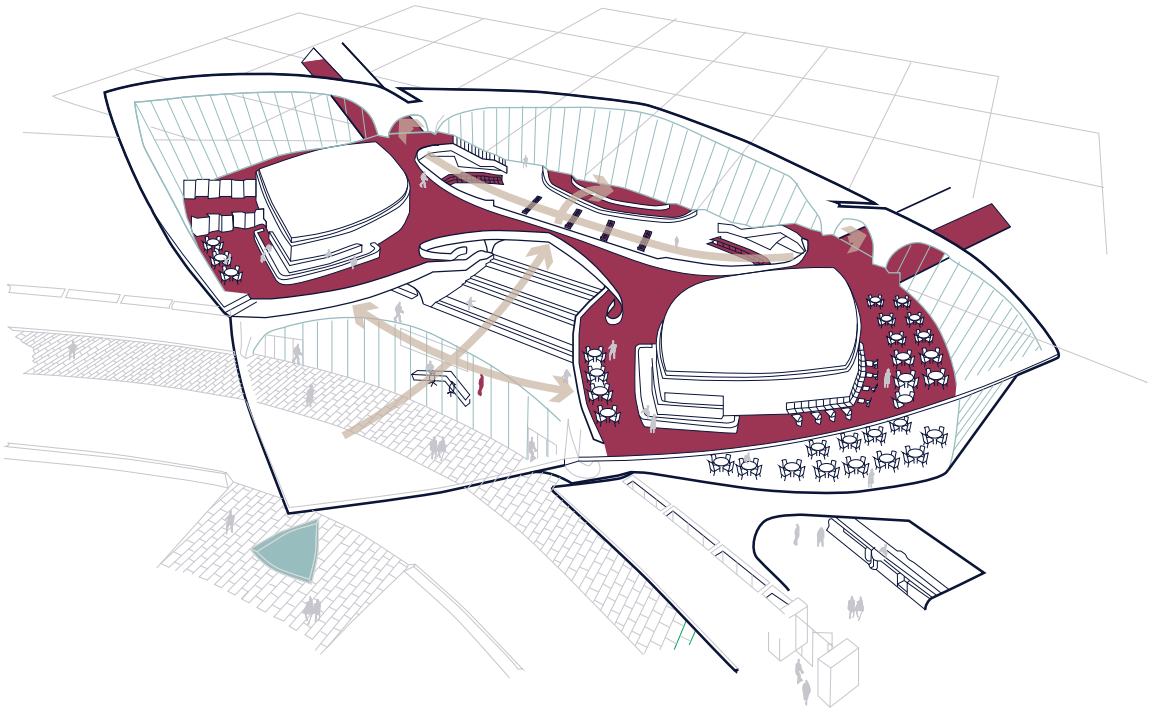
TWA Hotel Lobby, JFK, New York

The TWA Terminal at JFK was opened in 1962 and was designed by Eero Saarinen in the form of a bird. It is one of the boldest symbols of the jet age. The TWA hotel lobby is renovated from the central structure of the TWA terminal by Beyer Blinder Belle Architects. It is connected to the JFK terminal by two corridors. Using the red carpet and nature lighting, the corridors attract passengers from the terminal and guide them to the lobby. On the middle of the roof, the four feet wide X-shaped skylight allows nature lighting in, but reduces solar gain. The curved curtain wall echoes the wave-shaped lobby structure, maximises natural light to lounge, and proving views towards the airport apron of parked aircrafts. Right under the vaulted ceiling of the central hall, the new sunken lounge separates the resting passengers and gives them a sense of security. The fabric on the walls and the carpet help the acoustics, give passengers a warm and welcome ambience, and define the sense of the 1960s. The lounge offers comfort seats with enough space for luggage, and each seat is equipped with a charging outlet.

At the jet age, there were not many air travelers, and the scale of the terminal is much smaller than now. Security procedures were not as strict as they are until 9/11. Therefore, the terminal at that time could achieve human scale easier. After the renovation, the TWA terminal became the hotel lobby, and because of the change of the program, it paid more attention to the passengers' sense of comfort.



Plan of twa terminal lobby. (base map from Futagawa 2007, 9)

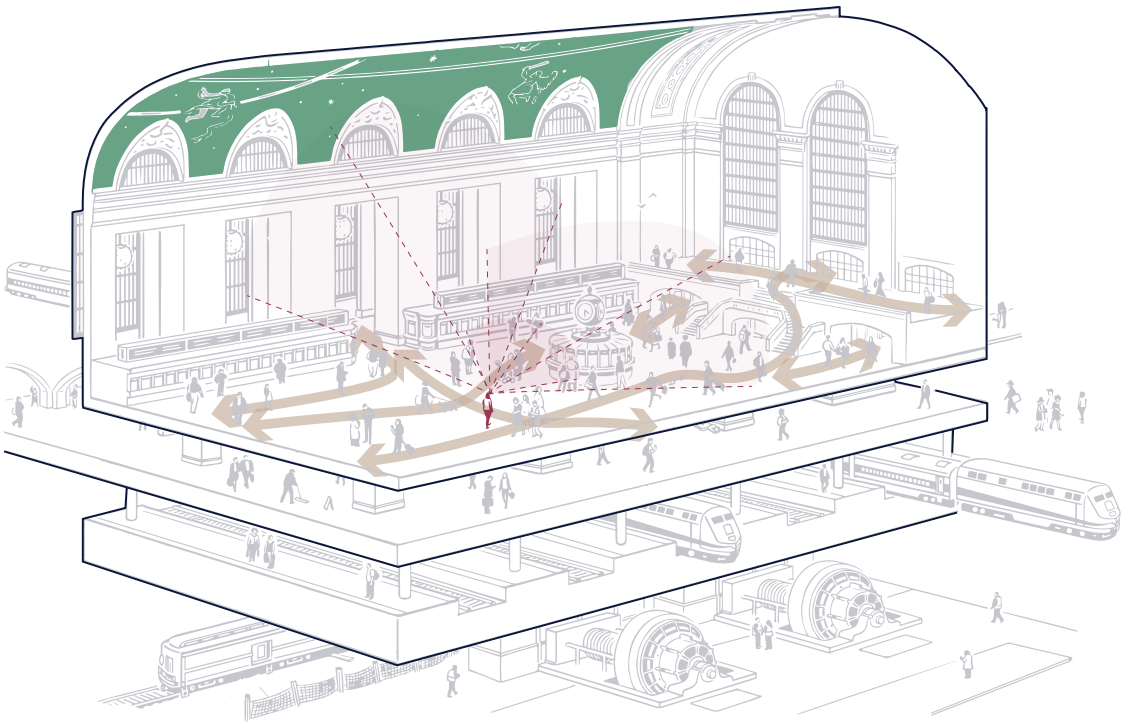


Brid view of TWA terminal.

Grand Central Station, New York

Grand Central Station, designed by Reed and Stem, is a rail terminal station at 42nd Street and Park Avenue in Midtown Manhattan. As “Terminal City,” the station is a system of efficient circulation between streets, trains, subways, and adjacent buildings. It contains departure areas for commuter and long-distance trains, main circulation concourse, subsidiary ticketing space, waiting rooms and commercial space. Multi-level circulation ramps replace stairs, facilitating pedestrian traffic through the station.

The Main Concourse is located on the upper platform level of Grand Central in center of the station. It is lit by ten globe-shaped chandeliers in the Beaux-Arts style, and each wall has three round-arched windows that allow natural light to come in. The Main Concourse is surrounded by balconies, and underneath the east and west balconies lie two intricately



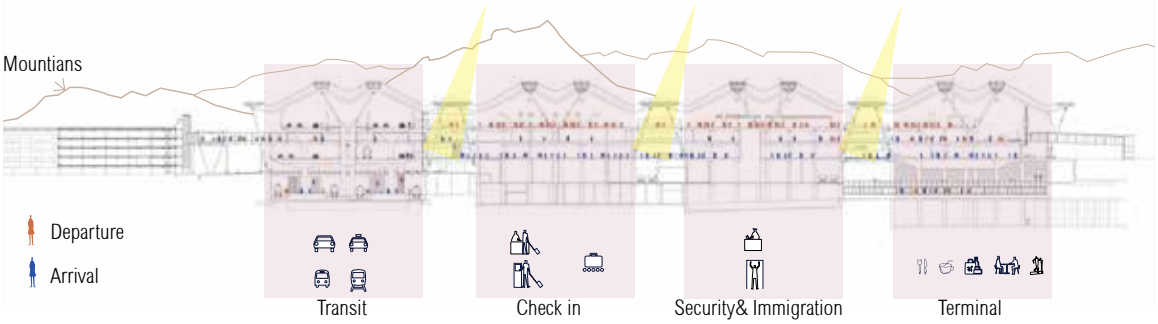
The main concourse of Grand Central Station.

carved marble water fountains. Varieties of stones are used for the interiors, and on the main concourse's ceiling, a gold-color constellation was painted on the green elliptical barrel vault. Large four-sided brass clock is placed in the middle of the concourse, serving as a perennial meeting place.

Integrating the train system with an intricate web of urban conditions, the Grand Central Station is a good example and an innovative complex that reflects the appreciation of the urban character and the changing needs of a booming metropolis. Serving as the most influential gathering space in Manhattan, the design details of Main Concourse offer the sense of place. However, compared with the rail transport, the airports contain stricter security checks, greater passenger flow, and longer waiting time for passengers. The rooms in the contemporary airports are usually much bigger than the Main Concourse, which causes the disoriented for passengers and promotes the sense of Non-place.

Terminal 4, Barajas Airport, Madrid

The terminal 4 in Madrid airport was designed by Richard Rogers Partnership and Studio Lamela. It is a model of legibility which has a series of straightforward linear diagrams and spaces for departing and arriving passengers



Section of Terminal 4. (base section from The Plan 2010, 89)

(Rogers Stirk Harbour + Partners, n.d.). There are three lineal modules as Check-in spine, processing spine, Pier serving different functions according arrivals or departures in the terminal building.

The terminal has a series of light-filled ‘canyons’ that symbolize Madrid’s terrain, bring natural light in the lower level, reduce dependence on artificial light, and maximise views towards the surrounding terminal landscape. More importantly, the canyons separate the terminals and indicate the departure or arriving sequence for a passenger. Both arriving and departing passengers on different levels can share the impressive full height canyon space on circulation bridges. However, without other clear human scale guidelines, the grand scale of the “canyons” enlarges the airport’s complexity for passengers to exacerbate the sense of non-place.

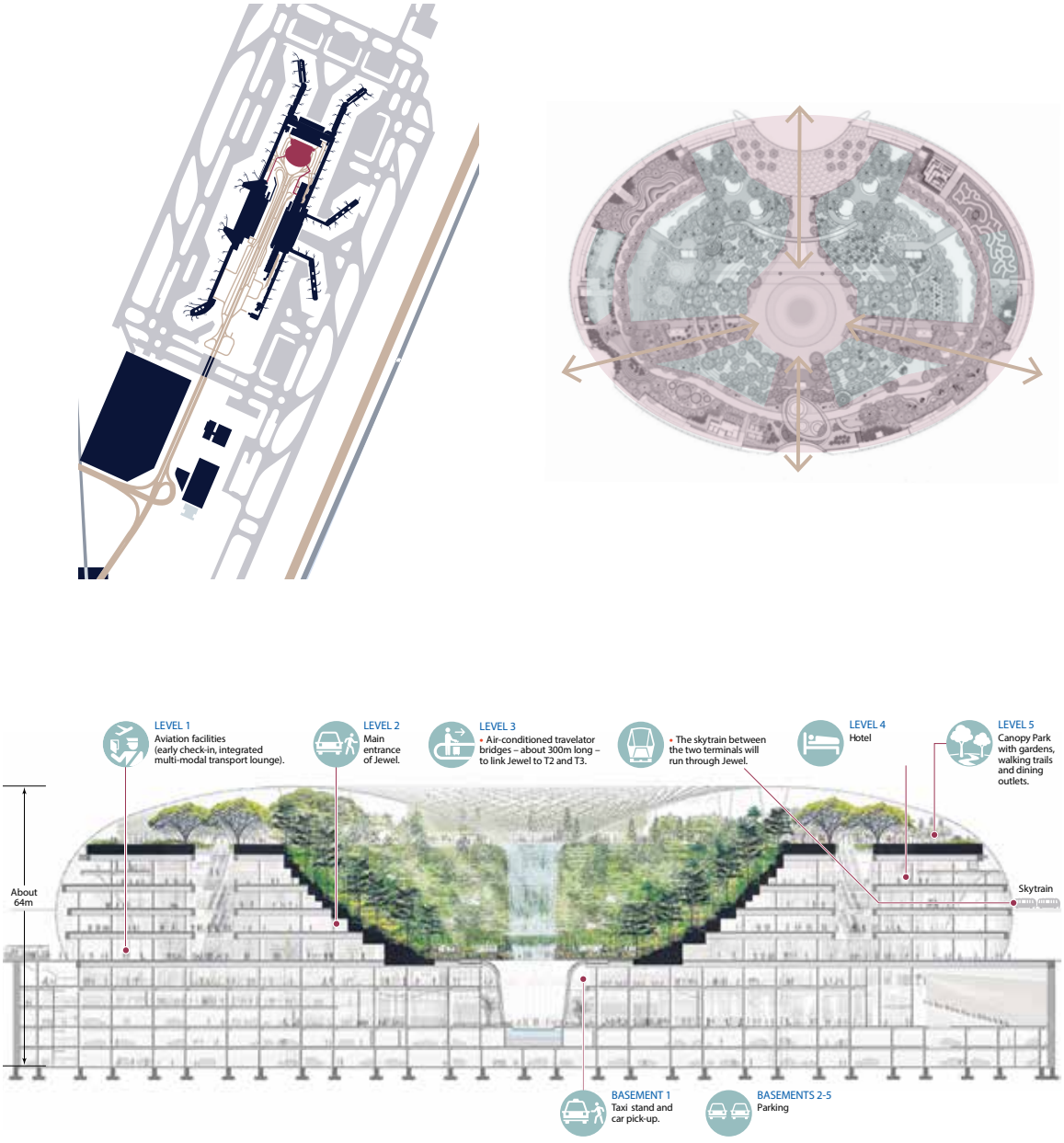
Archdaily claims that the design of the terminal offers a functional and comfortable area for the passenger (Santibañez 2018), but New York Times criticizes the terminal as having no comfortable furniture, dreary ambience and uninviting interiors that do not allow travellers to experience the space and unwind (Holbrook 2016).

The Jewel, Changi Airport, Singapore

As a connection between existing terminals in Singapore Changi Airport, the Jewel is both an intense marketplace and an indoor garden, which offers a range of facilities for landside airport operations, indoor landscape, leisure attractions, retail offerings and hotel facilities (Safdie Architects, n.d.). Covered by the dome-shaped glass and steel façade, the Jewel accommodates verity programmatic needs for the Changi Airport. The indoor garden is the core

program, which offers spatial and interactive experiences for visitors. In the middle of the roof, water comes down from the Rain Vortex in the center of the building from five stories above the ground level. The Rain Vortex not only collects rainwater and provides cooling and airflow for the whole structure, but also helps passengers mark their location at the airport. It is reinforced by four cardinal axes with gateway gardens that orient visitors and connect visual viewpoints to the internal surroundings and other airport terminals (Safdie Architects, n.d.). The Jewel is directly connected to the Changi Bus Terminal and the airport's Terminal 1. From Terminals 2 and 3, passengers can get to the garden via pedestrian bridges, or take the interterminal train to cross through.

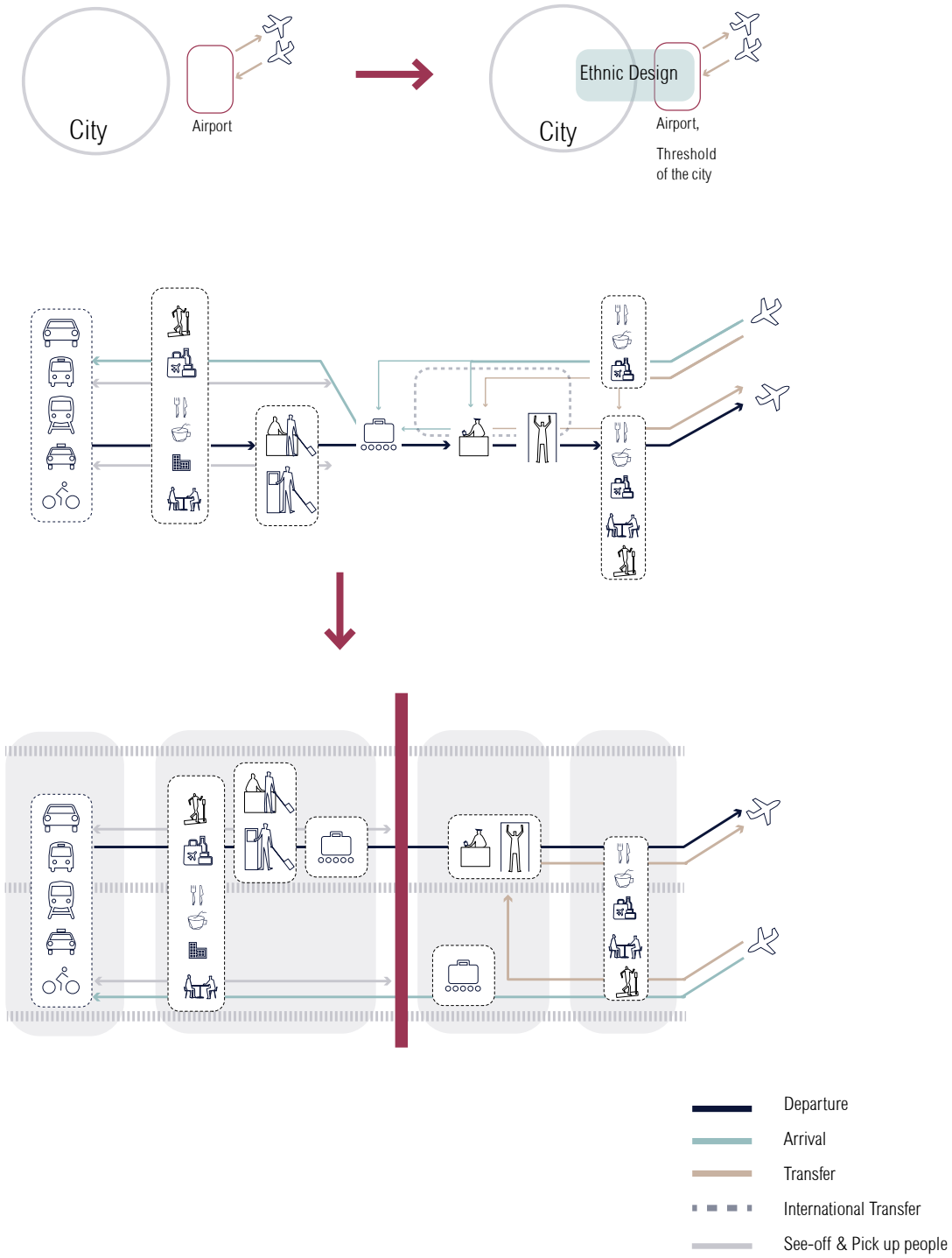
As the extension of the Changi Airport, the Jewel functions as not only a transit hub, but also a public gathering space for Singaporeans and international travelers. The design offers a new thought and model for airport renovations, so that terminals can become discrete destinations for social activity. The Jewel weaves the nature and the marketplace experience, and promotes the idea that the airport can be a new exciting and vibrant community-centric typology. The Jewel attracts travelers, tourists and residents, and echoes Singapore's reputation as the "City of Gardens". However, it is a single building independent of the terminals and the entire airport system, which is more like the threshold between the airport and the city. The thesis focuses more on exploring architectural interventions weaving the airport building system and the program sequences together as the threshold of the city.



Site plan, plan, and section of the Jewel (base plan and section from Safdie Architects, n.d.)

Chapter Conclusion

The discussion of the “Non-place” and place reinforce the reason why most contemporary airports are “Non-place.” Airports are criticized as being too large, designed without consideration for the scale of a human, and argued to be exist within a vacuum that does not take the history of the site or the surrounding context into consideration. Through the analysis of the above four cases, architectural criteria are summarized to make airports an inhabitant “good place.” To reintroduce the sense of place into an airport, three scale strategies should be applied. An urban scale strategy to make an airport related to its host city and dominant culture. Integrating ethnic building elements, including design methods and materials, to the airport renovation creates strong sense of identity and connects the airport terminal as a threshold of the city. To enhance the orientation and safety for passengers in the process sequences and the terminal rooms, a legible spatial organization is needed with a range of clear human scale guidance. It requires visual representation of a clear user story or journey within the predetermined route in airports through architecture design. The quality of the “room” is indispensable, which requires clear circulation, unique and variety lighting, and the spectacle of space that connects passengers with the city’s history and memory. The terminals therefore become not only a machine that works, but also a place that engages the traveler, awakens them to be more conscious of their surroundings, and encourages the possibility of organic social life.



Diagrams of make airports an inhabitant “good place”.

Chapter 4: Bring Gardens to Make a Place

After analyzing the airport system and understanding the spatial relationships between Non-place and place, “The Garden” can be used as the method of growing a sense of place through the gaps in the airport machine. “The Garden” aims to express the airport’s one remaining certainty, movement, and meet the architectural criteria discussed in the Chapter 3 that make the airport a “good place”. The application of various garden techniques in an airport reflects a strong sense of their history and memory. Linked by the garden paths, the processing sequences of the airport create a garden tour between the city and the aircraft. Incorporating the garden into the airport design can create a residence for private and public places.

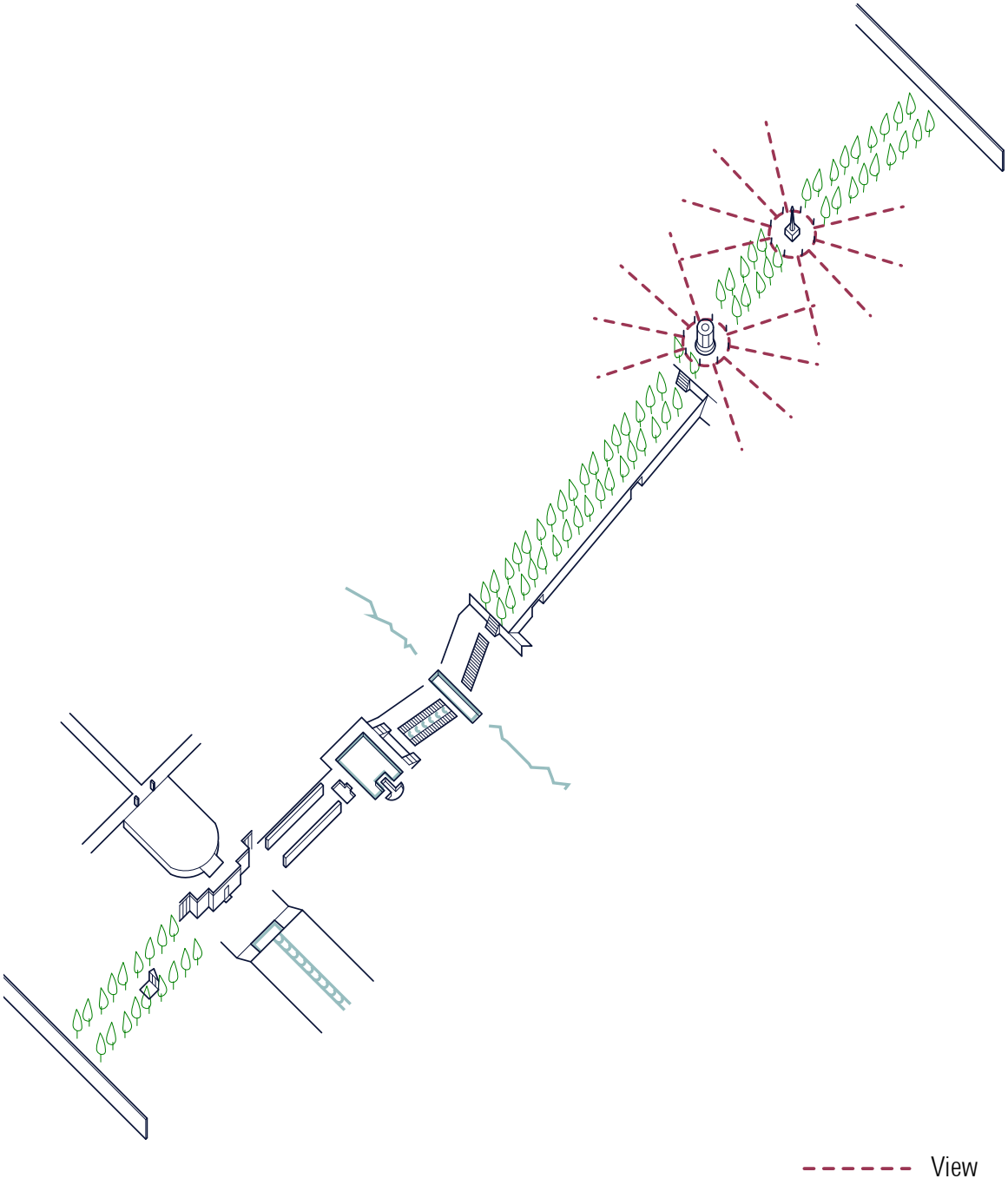
“The Garden” and Airports

Gardens and the Context

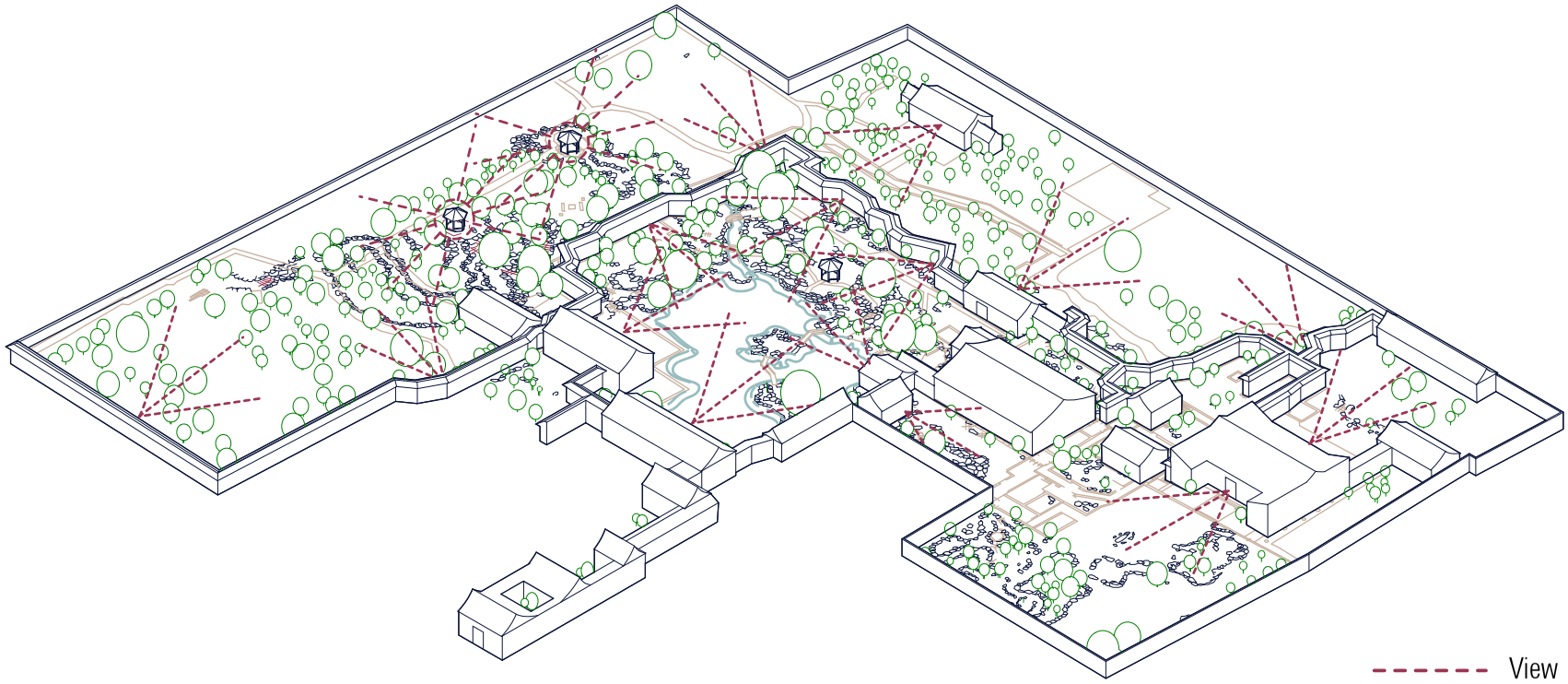
Variety garden techniques represent a strong sense of their own history and memory that they can help airports create the link to their host cities. The thesis studies three different gardens, Bramham House, Lingering Garden, and High Line, that are from different cultures, built in different ages and regions. The landscape garden at Bramham House, is a French style Formal garden in England. The layout of the garden can be understood as an orthogonal grid, with a principal axis of the house and the main path of the garden that link the various parts of the landscape garden with each other. The grid is distorted to accommodate the terrain’s natural conditions. Bramham illustrates the grid plan theory in English landscape design by featuring a direct

confrontation between the design matrix and the landscape morphology (Steenbergen, Reh and Smienk 1996, 307). The Lingering Garden in Suzhou, China, is a classical traditional Chinese garden, which seeks to recreate natural landscapes in miniature. A winding covered path connects the four themed sections. The extremely uneven distribution of buildings and density contrast each other in the Lingering Garden and illustrate the essence of Chinese classical gardens. Extensive use of rockery and winding trails create small garden sceneries and make it different from the royal gardens in northern China (Peng 1986, 39). The design method of combining waterscape and grotto is distinct from the Japanese rock gardens. The High Line is a linear park that has been carved out of New York City's existing urban fabric. Built on an abandoned elevated railway, the High Line establishes a transition experience for its users from the existing steel structure to the elevated new landscape. With the preservation and restoration of the historic railroad tracks and the art deco railings, the sustainable design of the High Line honors its history of the infrastructure structure.

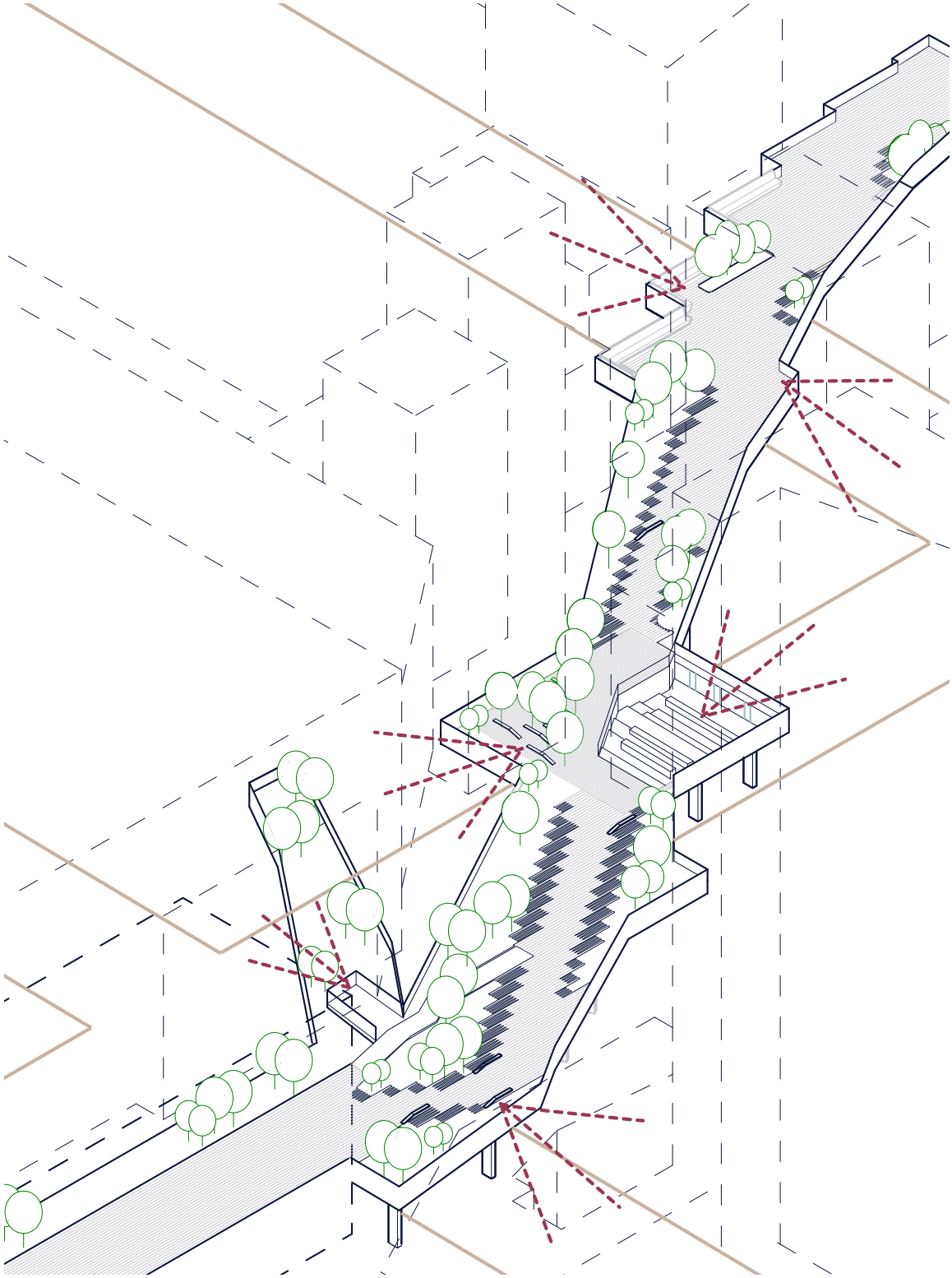
The three gardens respond to their context in terms of design techniques, materials used, and architectural components. Thus, introducing the gardening techniques with a strong sense of place promotes the idea that the airport can be a part of the journey as an extension of the city, which will attract passengers to become involved in the airport space instead of being a spectator.



Axonometric diagram of bramham garden.



Axonometric diagram of lingering garden.



Axonometric diagram of the high line.

Gardens and the System

By analysing the three gardens and their organizational quality, the airport sequences (entrance, check-in, security, immigration, terminal, gates, etc.) can be seen as garden components linked by garden paths that create a garden journey between the city and aircrafts.

In Bramham House, the three woodland gardens are connected by a system of vistas and avenues, and walks and rides that also crisscross the natural landscape between the loose woodland gardens. The most important avenues form a triangle and are considered to connect the three woodland gardens in the estate at the very beginning (Steenbergen, Reh and Smienk 1996, 307). The garden corridors in Lingering Garden operate a 3D staging of the gardening composition with a foreground, middle ground, and background, and limit passengers' vision by framing the viewpoint to create the contrast of each garden parts. The design of the High Line is a series of public spaces and landscapes that are placed in a simple consistent line. It is a convergence of industry and nature, old and new, and inorganic and organic; accommodating the most remarkable elevated views of Manhattan and the Hudson River as a landscape experience.

The garden paths follow the organizational structure of the airport process sequences, and intersect with each other and lead to various points of the terminal garden interest. Process sequences spaces are placed as a series of voids along the garden paths, each with a unique connection. In the airport entrance, the paths are placed for quick and efficient way finding. In the check-in hall, the paths serve as springboards—sloped ramps that elevate visitors to

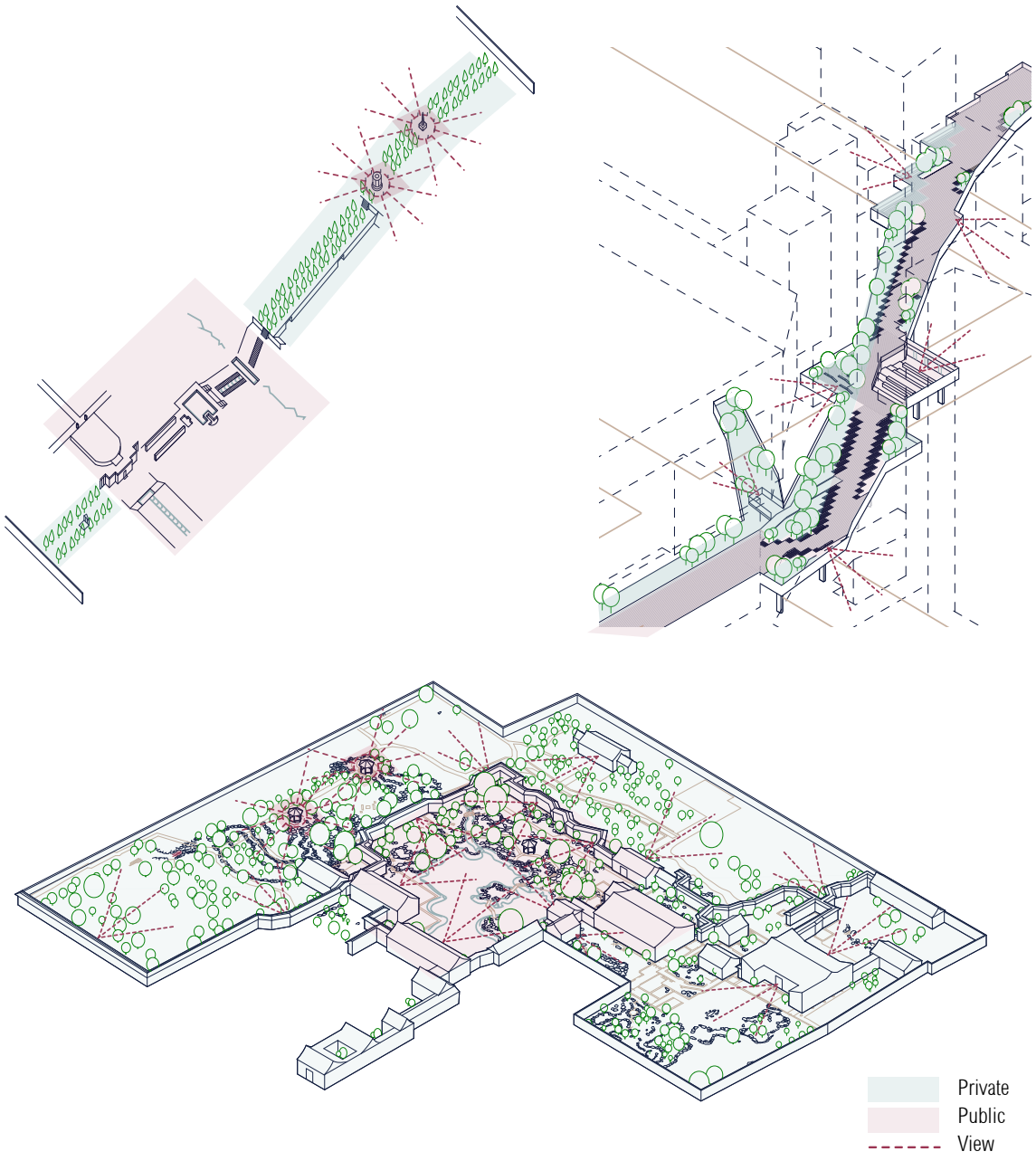
look out points toward their destinations. They divide the passenger flow into the numerous airlines counter and self check-in services. Also, they offer areas for visitors to pack and unpack their luggage, say goodbye to their friends and families, and prepare for security check. The garden paths in the security check and terminal boarding waiting area are designed to prolong the transition from the frantic pace of the airport processing sequences to the slow proposed landscape. To give a dimensional and organizational quality to the airports functioning system, the paths allow the visitors to retain a sense of place through the terminal.

Gardens and the Events

Different gardens provide visitors with different open and relatively private spaces for various events. The Bramham Garden and the Lingering Garden were designed as private manor, while the High Line is a public park.

The board walk along the main axis of the Bramham House garden is an important factor which linked the chapel, the parterre, the obelisk pond, the great cascade, the rotunda, and the obelisk. The space between the Forecourt and obelisk pond serves as an open expanse for gathering, while the woodland gardens around the chapel, the rotunda, and the obelisk are more private. In the Lingering Garden, the winding path covered by corridor roof, divides the entire garden into four distinctly themed sections: East, Central, West, and North. The ensemble of structures in the central encircles a pond and grotto, and is the most public space that serves as the living room of the garden. In the East, the mixed arrangement of buildings section the gardens into various sizes with winding trails between them creating small unpredictable landscapes. Both the West and the

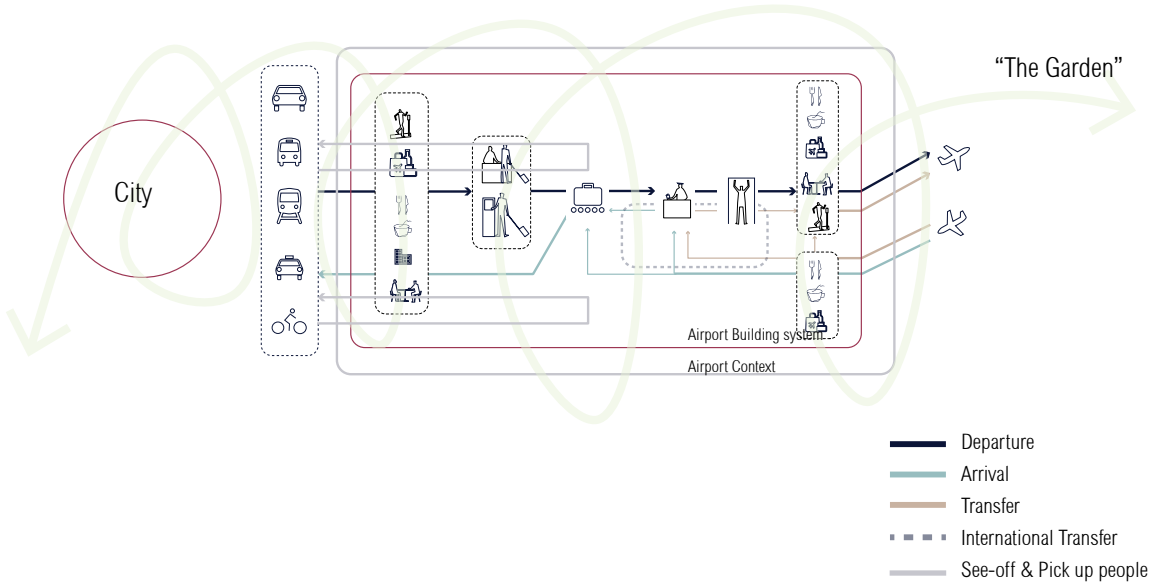
North reflect the “Leaving Blank” in ancient Chinese painting method. There is a minor courtyard in the North Stone Forest, and the natural western section only contains a few pavilions, a large artificial hill, and a Penzai garden (the ancient Chinese miniature art of portraying a natural landscape). The design method of entering the nature landscape untouched offers visitors a break to ease their



Comparison of the three gardens.

mind after the stimulation of the Central condensed artificial gardens. The High Line offers a break from the chaotic city streets, and initiates over thirty projects for community gathering of locals and international visitors. It not only offers an opportunity for users to experience an elevated space with uninterrupted views of the Hudson River and the city skyline, but also servers as a new public space with green areas, alternative transportation options, and social benefits to meet the urban environment's changing needs. By changing the hardscape and softscape proportions, an undefined and unobtrusive environment is created to allow the public to meander and experience the High Line in unscripted ways. The flexibility of the varied spaces provides small or large programming and single or group activities, which encourages spontaneous events.

The garden paths with a series of programmed spaces, landscapes, and active zones, provide an engaging place



Diagrams for "the garden" method.

hovering above the airport process sequences. They offer a space for activity and interaction that would evoke a sense of place within a superimposed airport function, which are meant to be explored and discovered by those that visited the terminal. Accommodated with the airport functions, each garden path gives the visitors a chance to relax, meditate, and even play. By bringing the garden into airport design thus creates a place for both the private and public to inhabit.

Design Strategy Summary

The airports have to be functional like a piece of equipment, but an airport terminal can radically change through the integration of materials and place making garden techniques. This new design can make its inhabitants consider the space they are in as more than simply a series of necessary, annoying or invasive events before they get to their destination. The thesis respects the character of the airport as a functioning machine that requires a massive scale, multiple levels, and open vast rooms. The second strategy involves a careful sense of dimension and scale. While intermixed plants with steel and concrete, the garden paths integrating into the airport process sequences to create human scale guidance for passengers to get through the process system. The garden paths are meant to minimize the overwhelming system and building scale, programing and events, and process sequence stress. A variety of viewpoints are designed along the paths to help visitors find their way in the airport system. The third strategy is to adapt local culture garden techniques and materials to make the airport as the extension of its host city, thus forming the airport to be a place.

The basic design method for airports are summarized in the following diagrams:

Five Paths

In the airport processing sequences, there are 5 main paths, which are for departure passengers, arrival passengers, transfer passengers, people who come to airport to see off or pick up.

Zone Separation

The security check is the zone separation. meaning that once passengers pass it there is no return.

Two main intersections

By changing the height of the garden paths, intersections in the terminals are created to form gathering spaces for an organic social life. As the main connection of the five paths, two main intersections are proposed: one is before the security check, and one is after. They give large space to interact, play, relax, and gather. The intersections of the five paths shape the central meeting point in the terminal—an open plaza and flexible venue to accommodate markets, festivals, and exhibitions. The one before security also serves as a goodbye point for departure and a meeting/ pick up point for arrival.

View Decks and Lookout Points

Several view decks and lookout points are placed along the paths for wayfinding and sightseeing. Integrating the 3D staging gardening techniques, the view decks in the terminal orient passengers by placing the process sequences into a foreground, middle ground, and background. On the top

of the two main intersections, roof decks are proposed for visitors to have a connection with the context of the airport.

Programs and Events

The paths that frame the airport garden further enhance the terminal as a hub of activity that provides a sequence of zones designated for play, relaxation, learning and gathering.

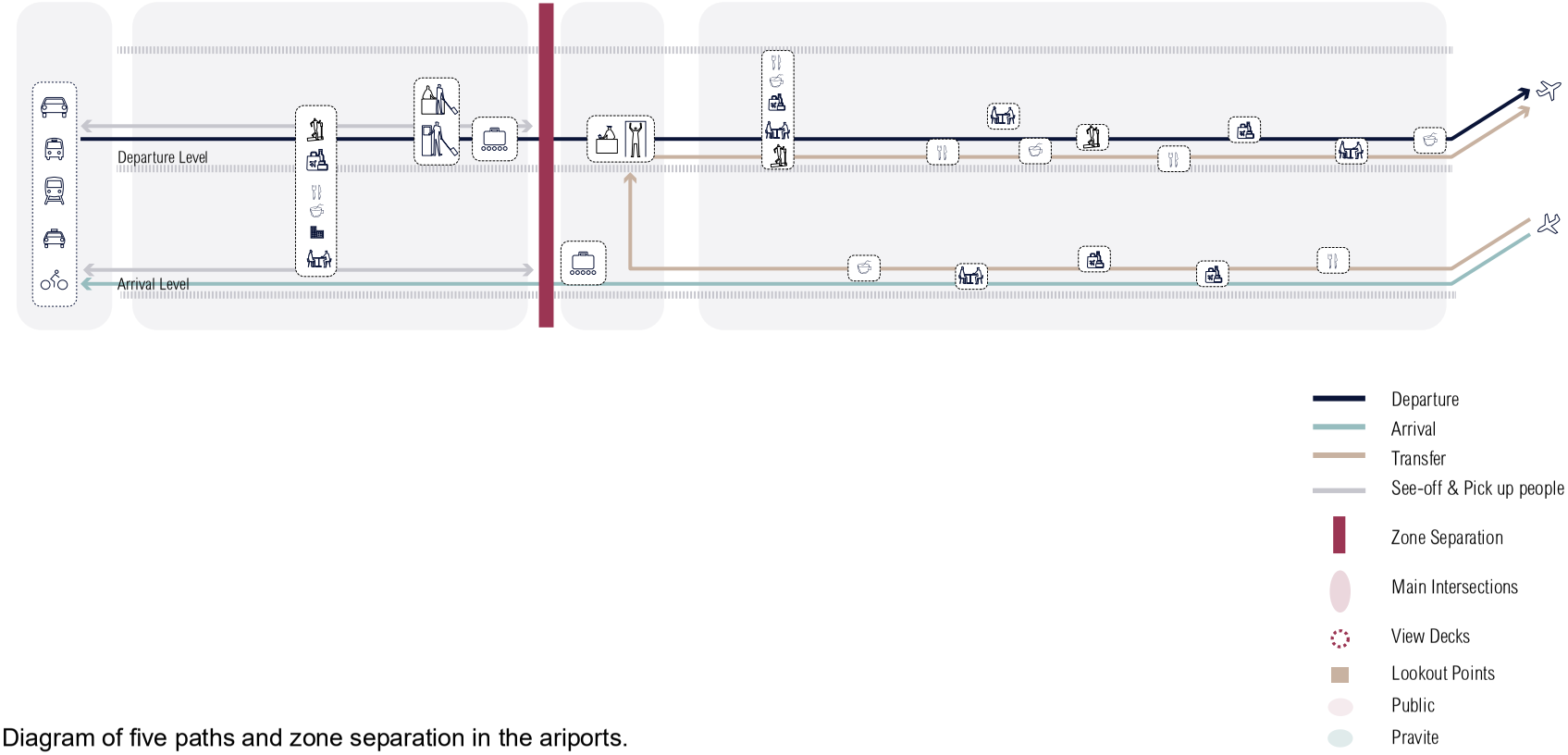
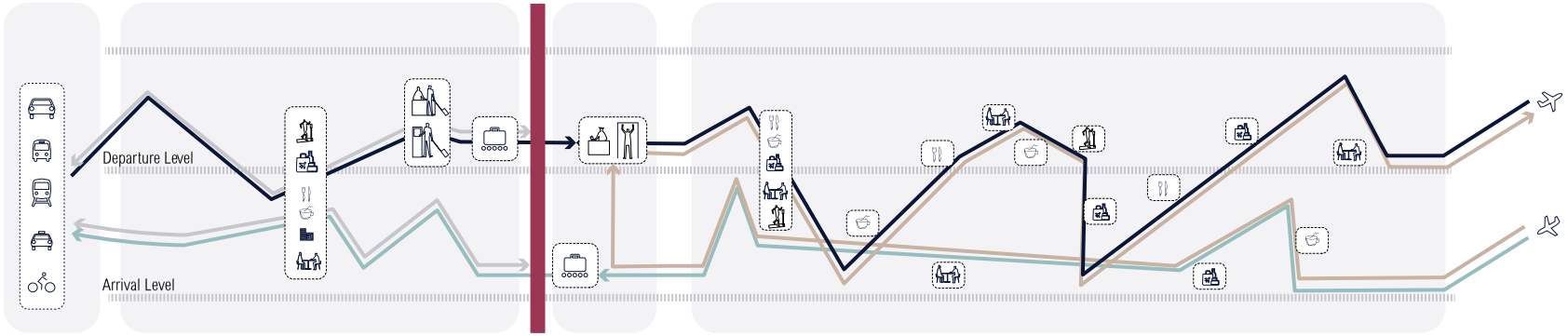


Diagram of five paths and zone separation in the ariports.



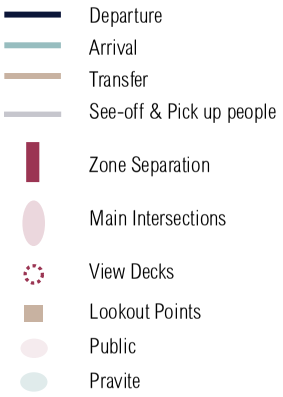


Diagram of changing the height of the garden paths to create intersections.

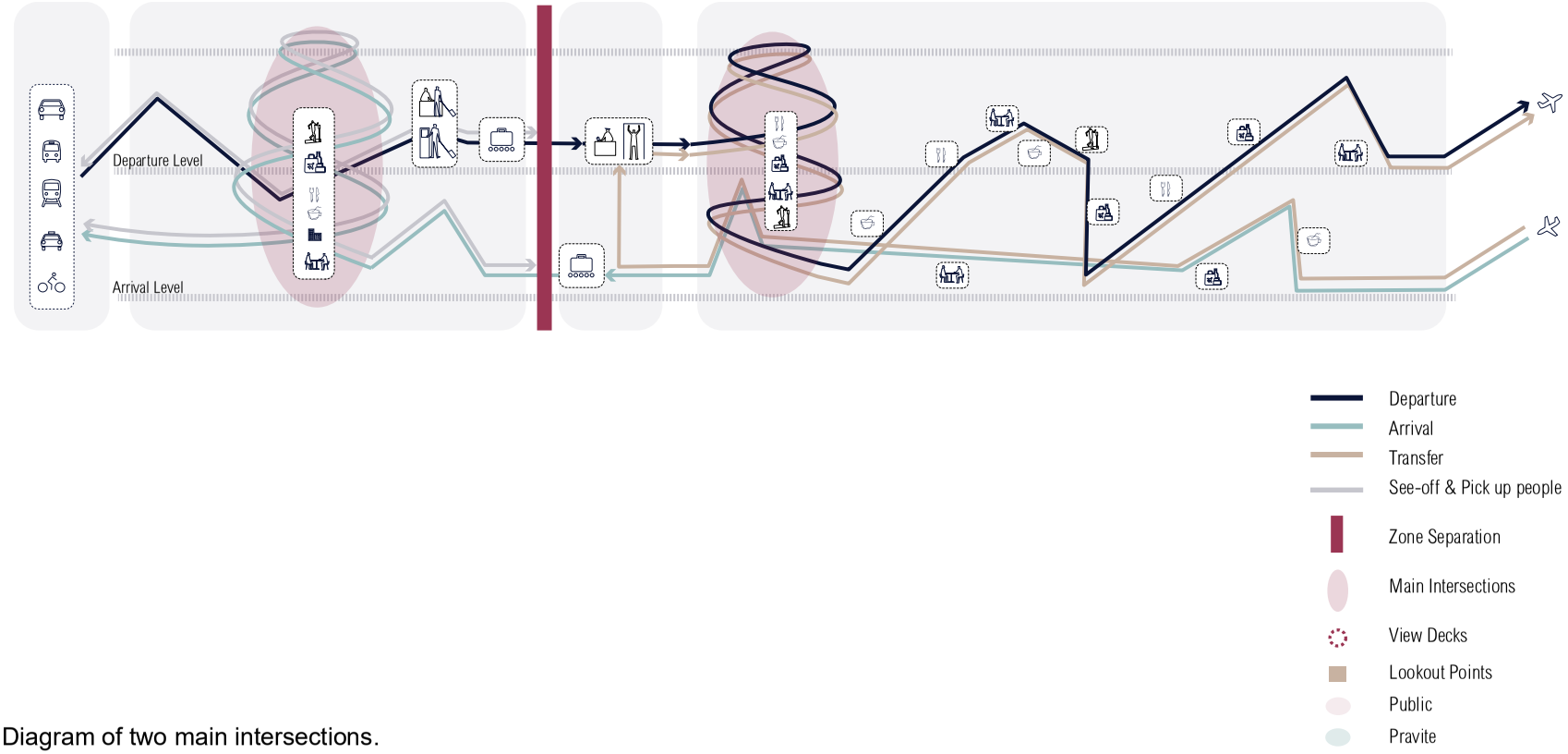


Diagram of two main intersections.

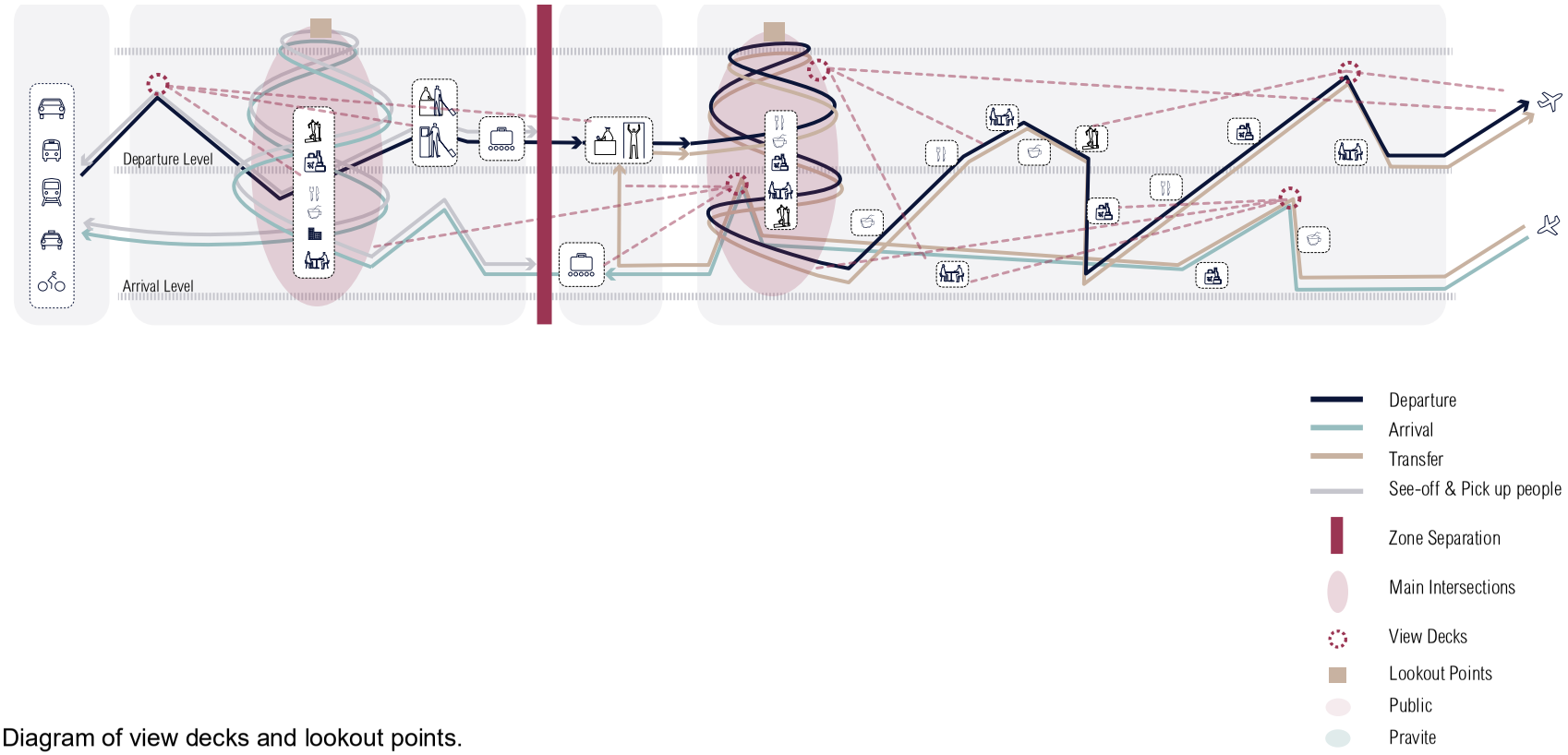


Diagram of view decks and lookout points.

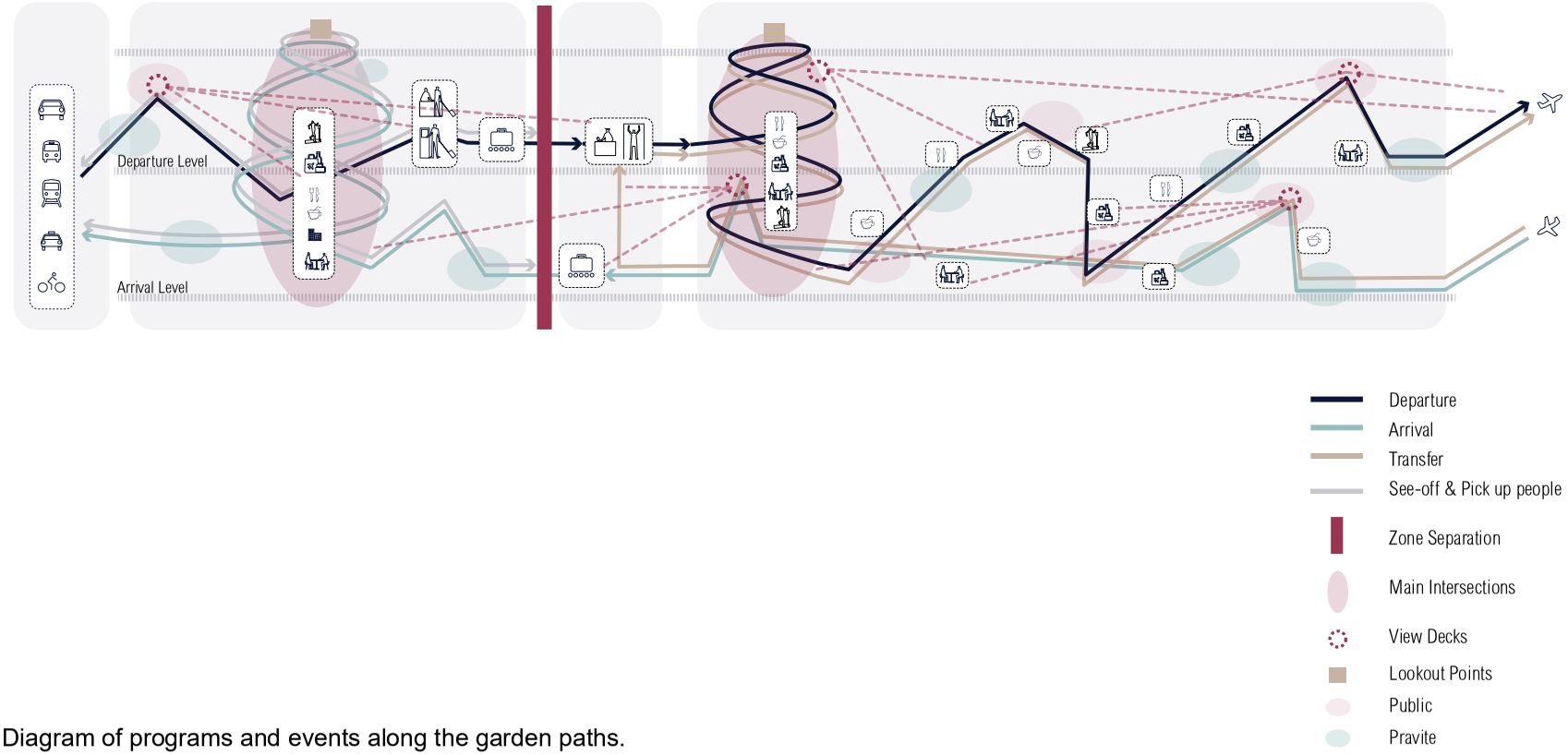


Diagram of programs and events along the garden paths.

Chapter 5: Design

Site Analysis

Pearl River Delta

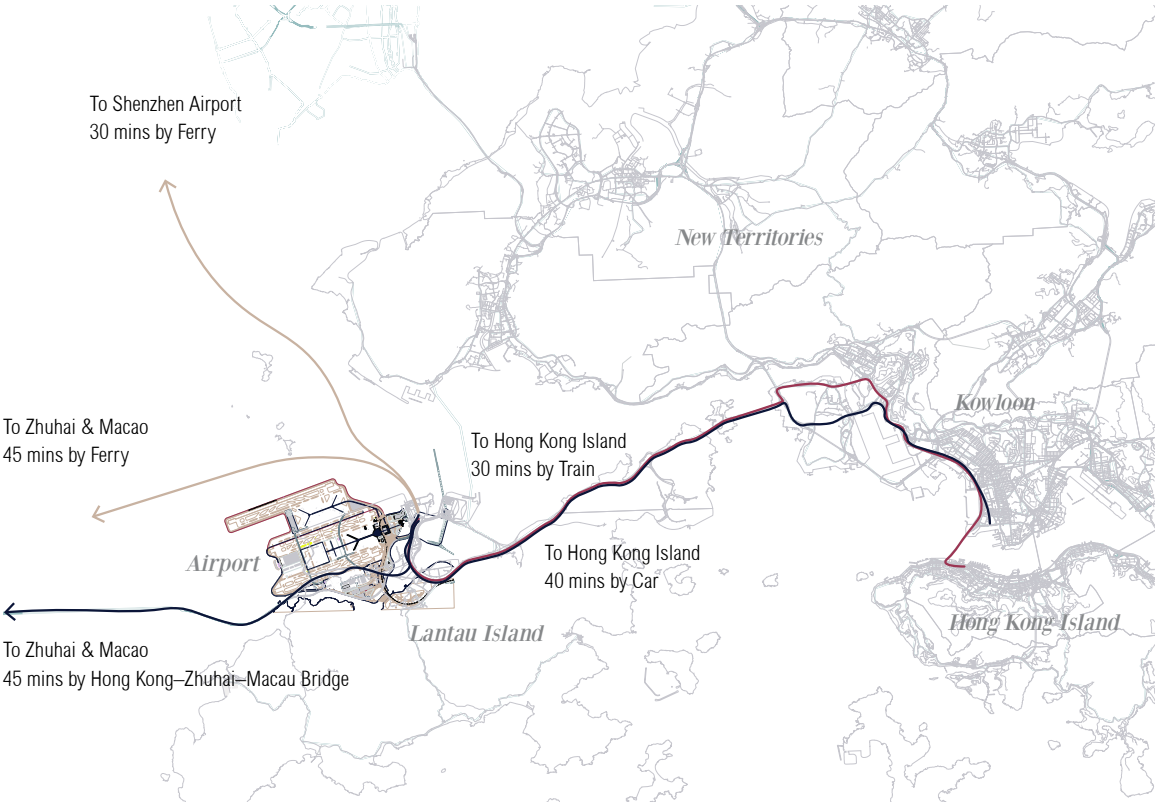
The Hong Kong International Airport is located in Pearl River Delta and is one of the fastest developing areas. The Pearl River Delta is in the southern part of china and one of the most densely urbanized regions in the world, often considered a megacity. The area of the Delta is 39,380 km2, which is two-thirds of Nova Scotia. There are twelve cities, including three cities with populations exceeding 10 million. According to the 2000 national Census, the Zone had a population of 45 million people (National Bureau of Statistics of China 2011). There are seven airports and five of them have the expansion plans, which include new runways, terminals, and airport cities. The Hong Kong airport is the busiest airport with the largest number of passengers among those seven airports. It offers different transportations between the airport and the surrounding cities.

2030 Renovation Plan

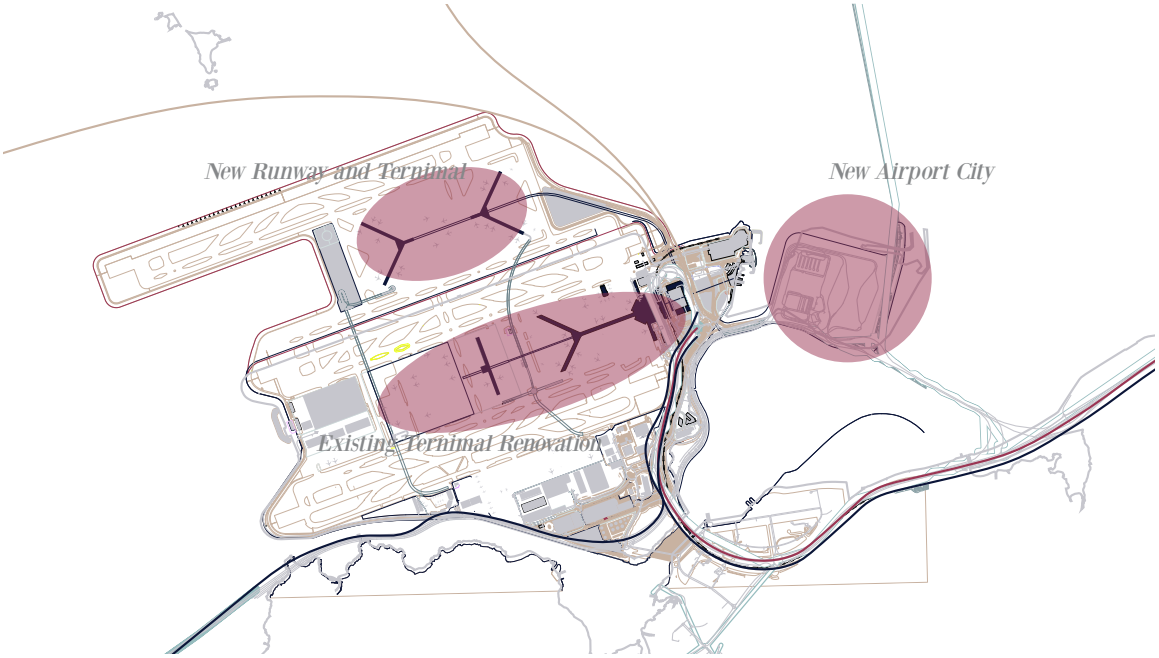
The Hong Kong airport has the largest investment in its 2030 master plan (HKIA 2011), including an airport city, new runway and third terminal, and renovating the existing terminals. This master plan proposes the airport as an inhabited place.

Pearl River Delta: 11 cites and 7 airports (base map from HKIA 2011)

1-Hour Commuting Circle from HK Airport (base map from HKIA 2011)



Transportation between Hong Kong Airport and its surrounding cities: (base map from HKIA 2011)



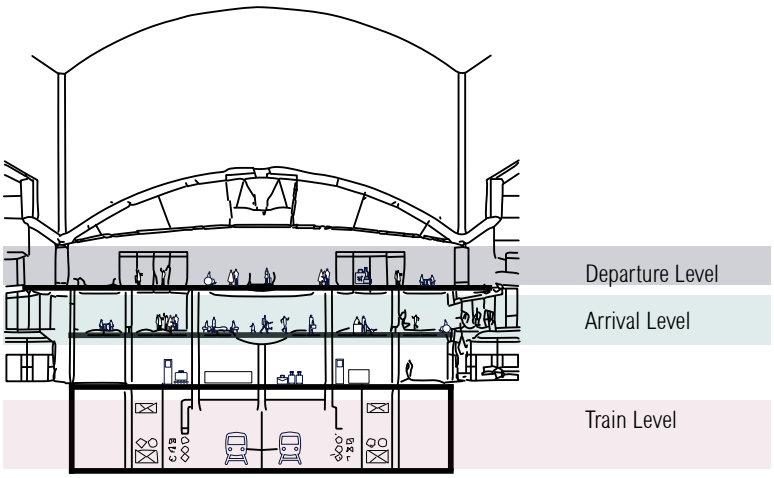
Hong Kong Airport 2030 Master Plan (base map from HKIA 2011)

Hong Kong Airport

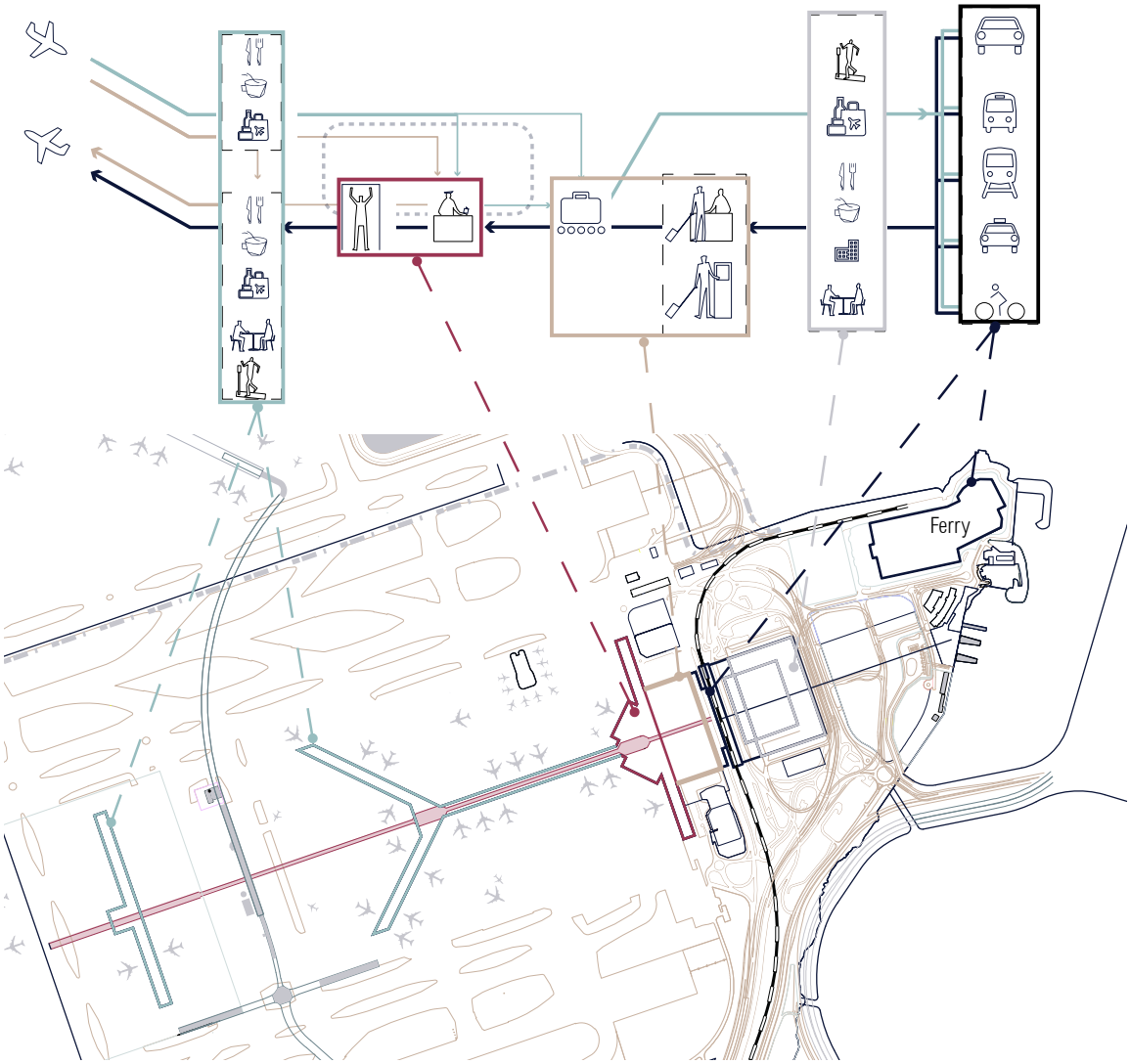
The Hong Kong airport is located on reclaimed land on the island of Chep Lap Kok. It was designed by Foster + Partners and was completed in 1998. It is the 8th busiest airport worldwide for passenger traffic; one third of the passengers are transferring, and majority passengers are visitors. The terminal is a typical pier-finger terminal. The passenger flow in the terminals is very clear, in which the departing passengers and the arriving passengers are separated on different floors. The airport has typical programs and sequences as other airports, thus making it a suitable site to test.

The terminal 1 building in Hong Kong Airport extends a concept pioneered by the practice at Stansted Airport- a model since adopted by airport planners worldwide (Futagawa 2007, 166). It is characterized by a lightweight roof canopy with natural lighting comes in the center of each vaulted roof. The vaulted roof also provides a constant point of reference for passengers throughout the process sequences.

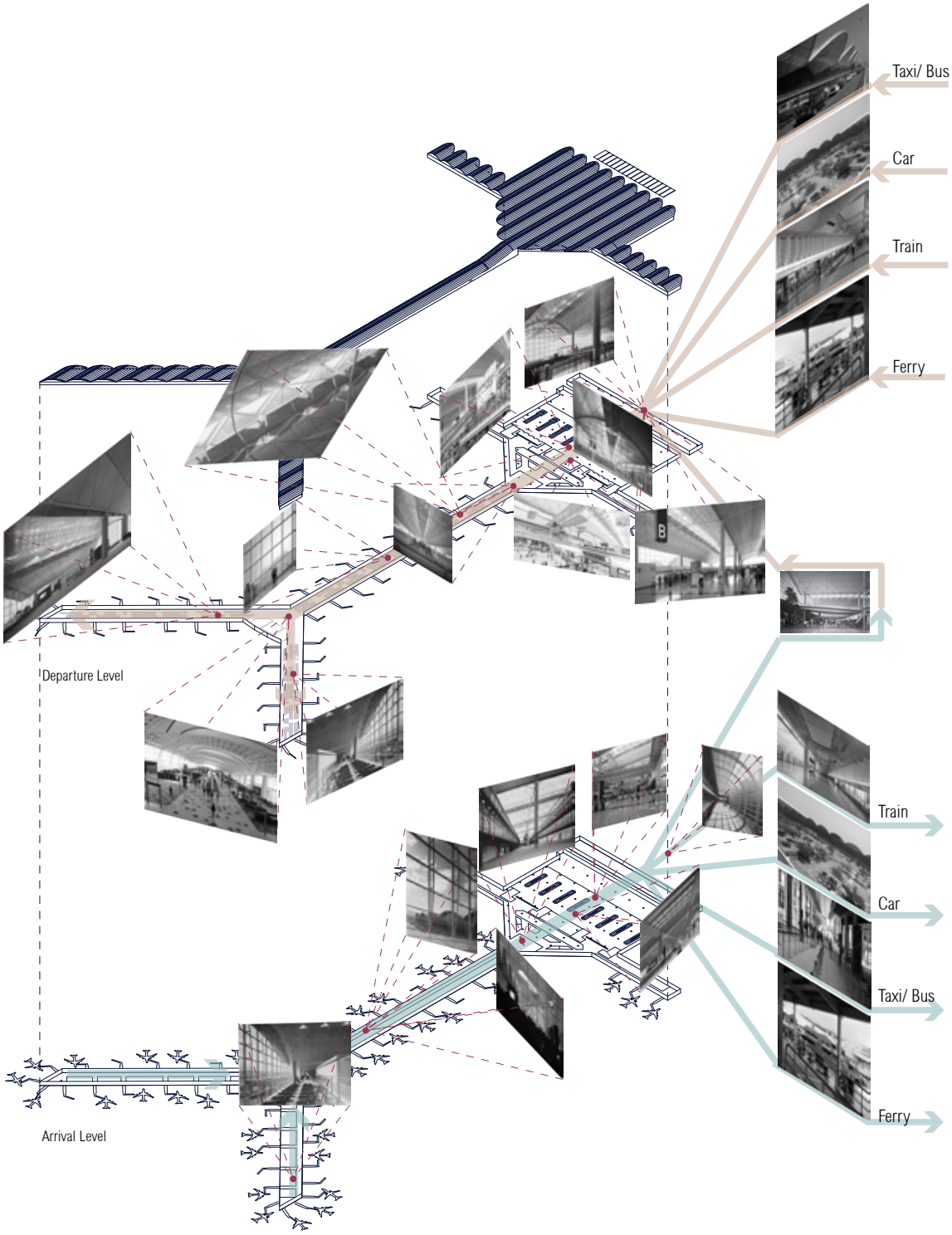
Hong Kong Airport passenger types. (data from HKIA 2019)



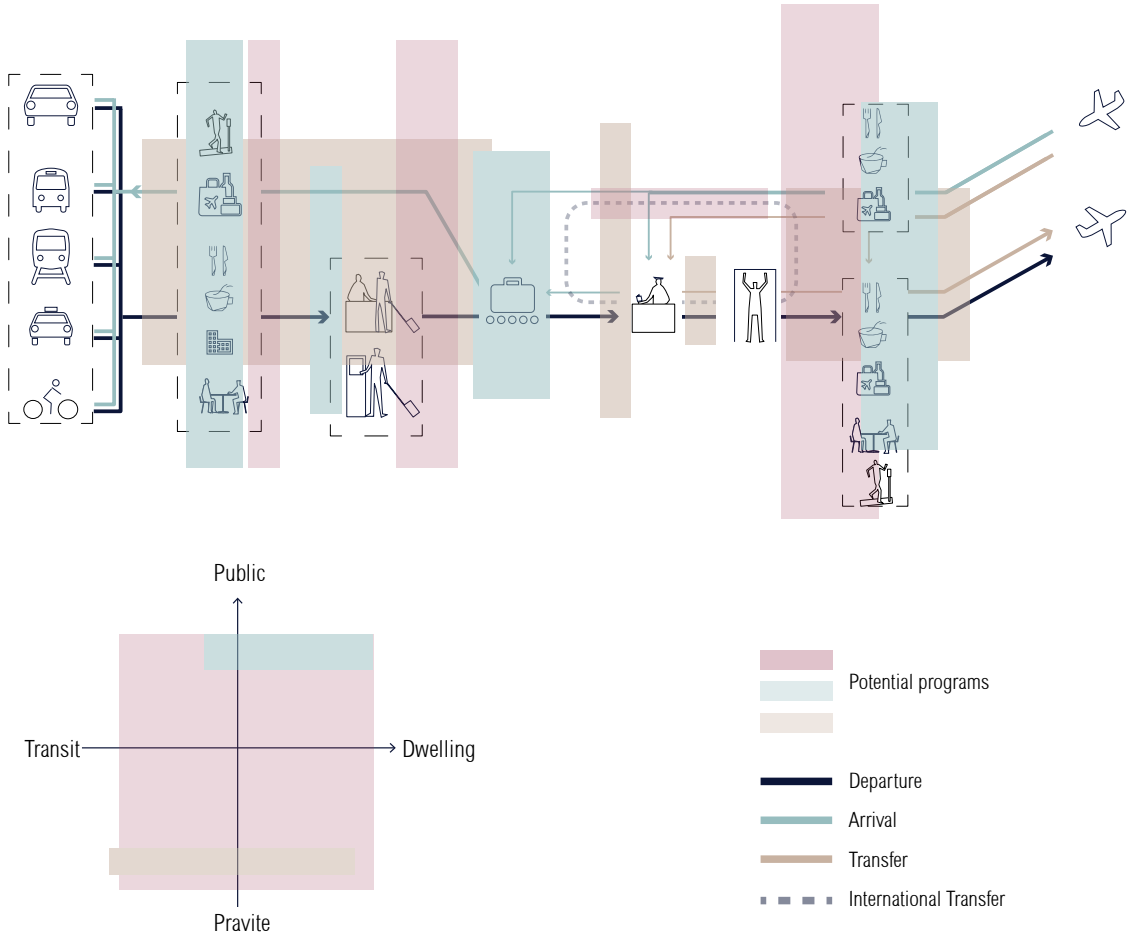
Section of Hong Kong Airport.



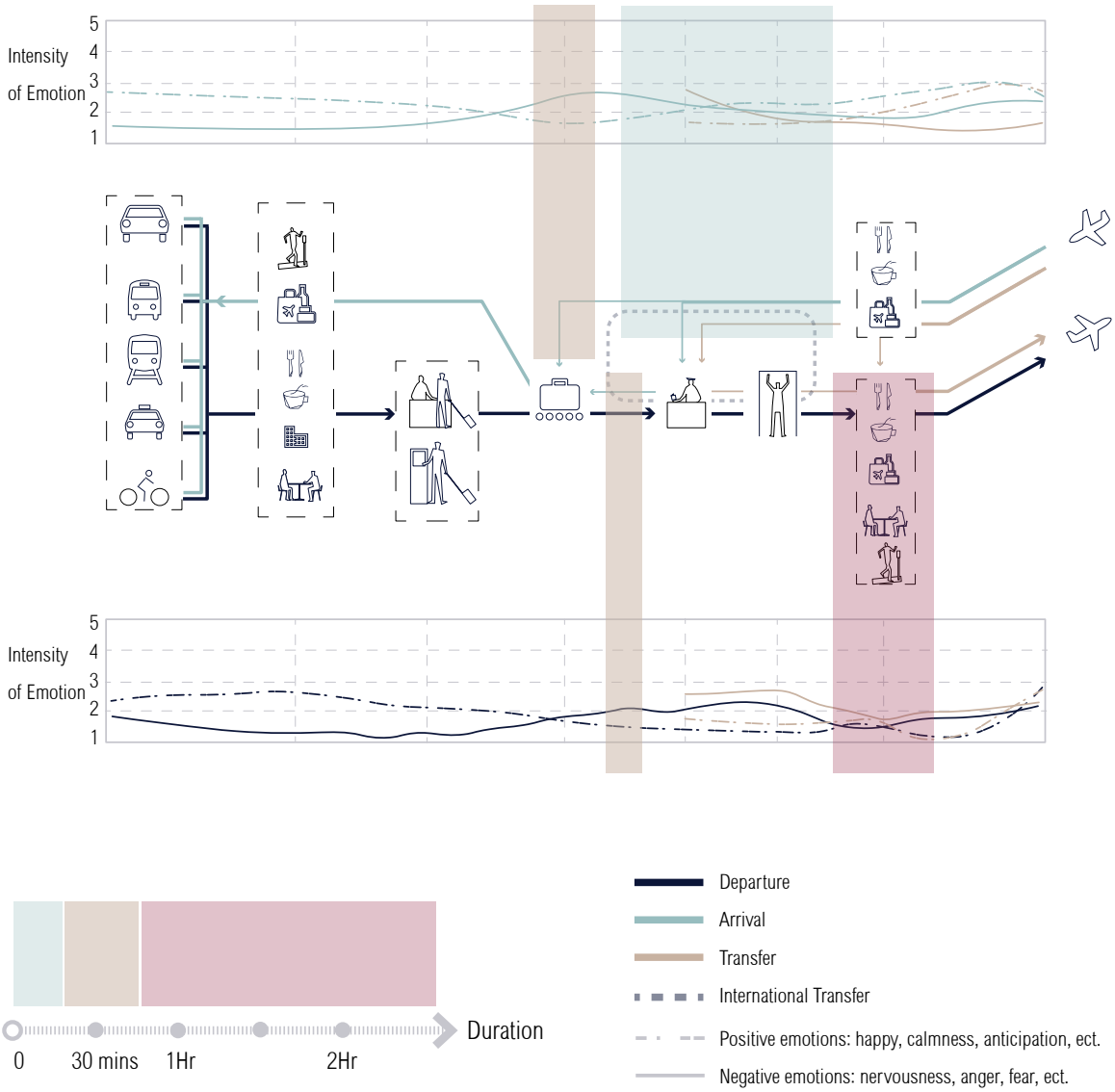
Plan of Hong Kong Airport. (base map from HKAI 2011)



Existing Hong Kong Airport with views.



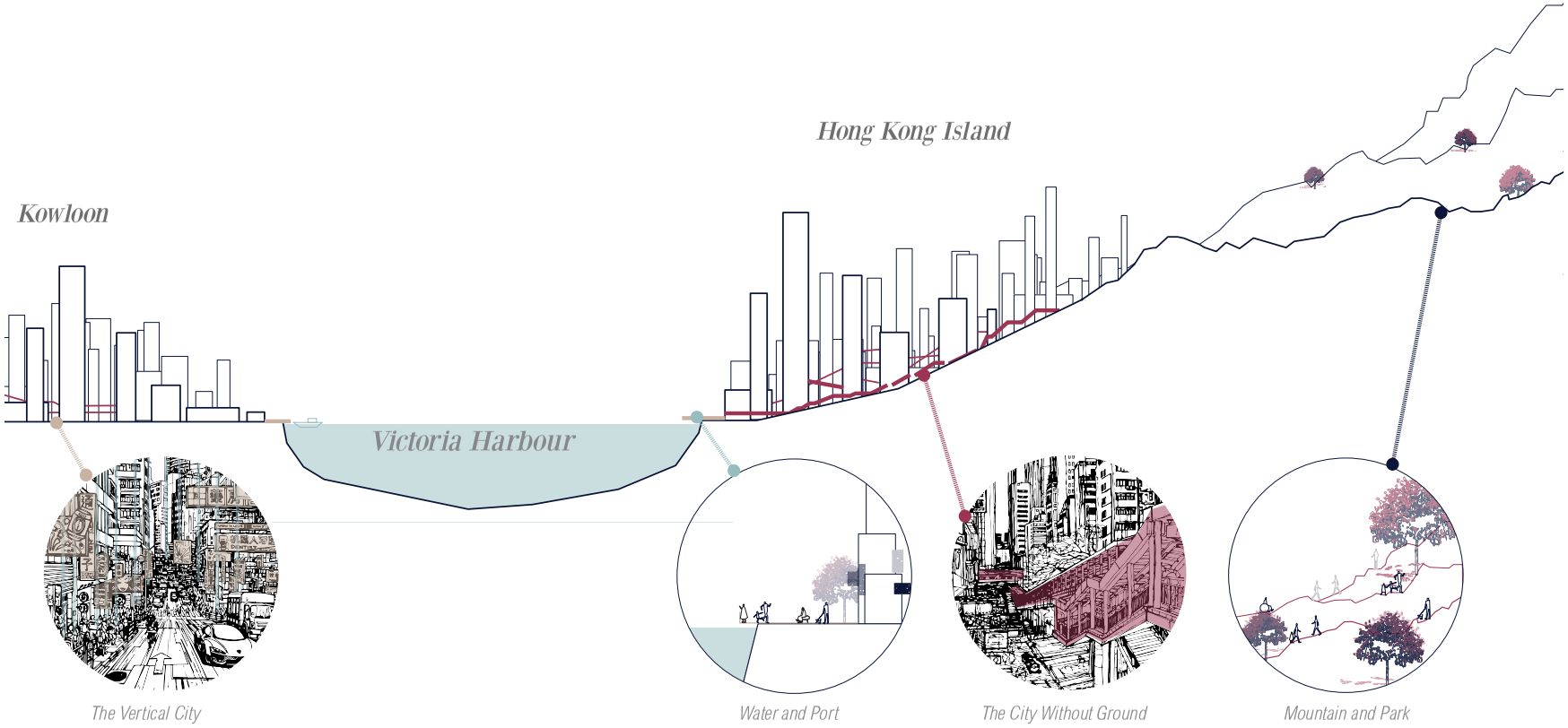
Reprograming the airport terminal.



Reprograming the airport terminal based on emotional map. (data from OEAP 2018 and BTS 2018)

Hong Kong City

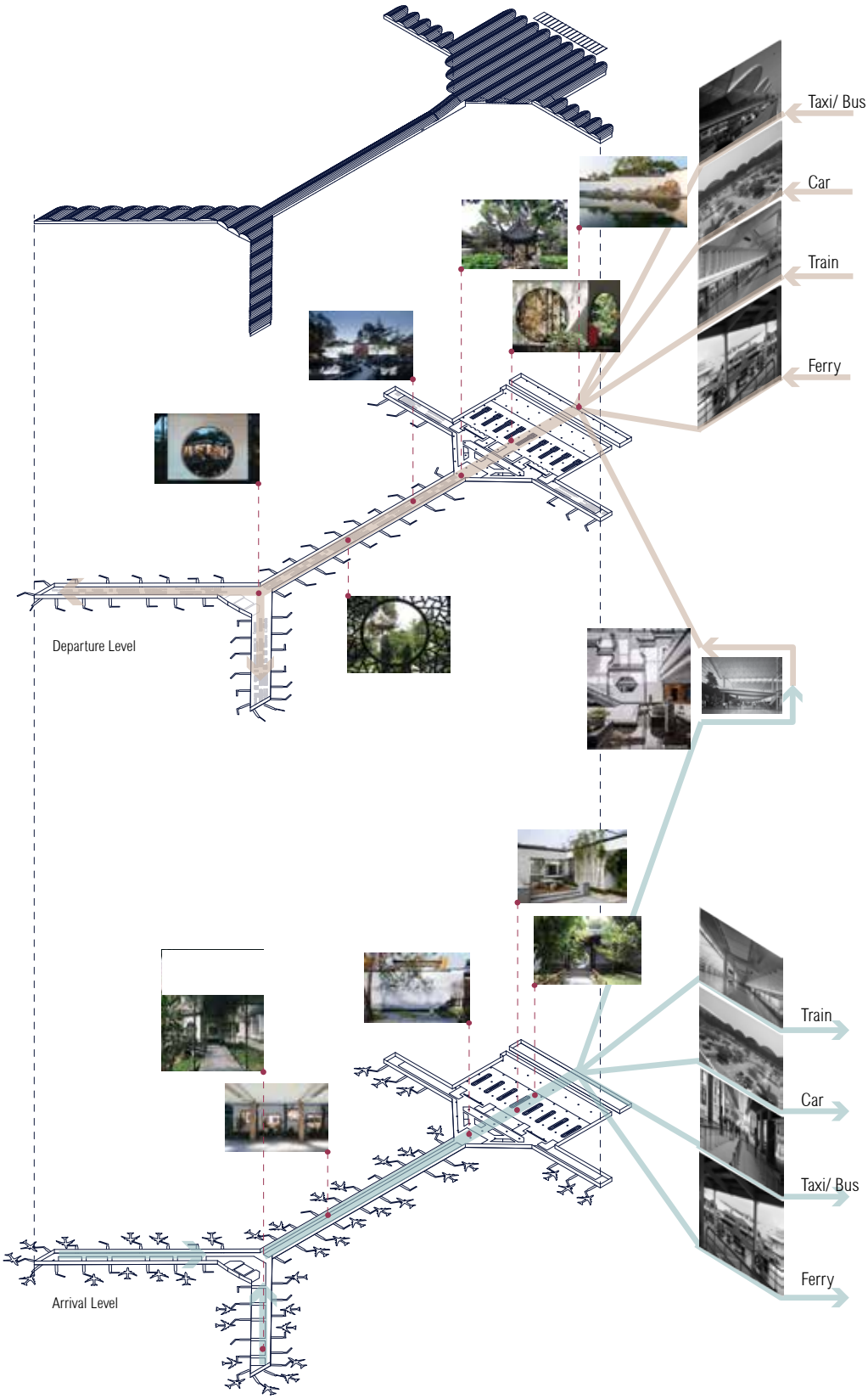
Introducing the landscape and the urban characteristics of Hong Kong into the design is one of the design strategies. Exploring the events and organization of the city site at the urban scale becomes an important reference. The terrain of Hong Kong is mountainous, and it becomes flat near Victoria Harbour. The altitude difference is one thousand metres between the highest point and the sea level. Hiking in the country parks is one of the daily activities of Hong Kong people and the people of the surrounding cities. The Victoria Harbour, the narrow water separating Hong Kong Island and Kowloon Peninsula, is one of the deepest natural maritime ports in the world. The harbour is a major tourist attraction. Lying in the middle of the territory's dense urban region, its sidewalks are used as gathering places for both tourists and residents. Hong Kong is known for its high population density. It is a vertical metropolis that is lived on multiple planes and in multiple dimensions; the skyscrapers and neon signs are similar to the movie scene of the Blade Runner. Building on steep slopes, the skyscrapers in downtown Hong Kong create a "city without ground" with three-dimensional circulation networks in the air.



Section of Victoria Harbour in downtown Hong Kong.

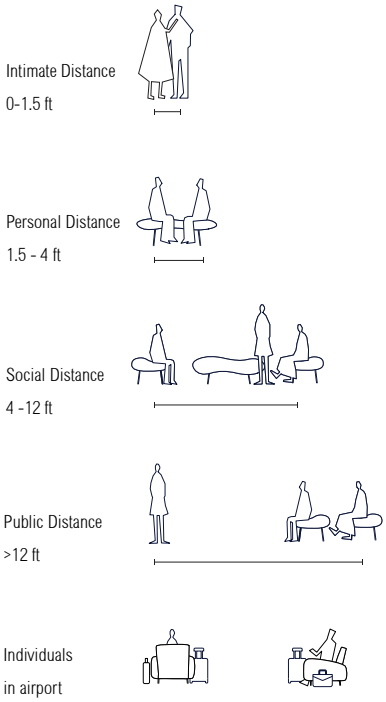
Lingnan Culture

Forming the basis of the cultures of Hong Kong, Lingnan culture (Cantonese culture) refers to the regional Chinese culture in Guangdong province and Guangxi province. Affected by the geographical features, Lingnan architecture and garden design differs from other Han Chinese region cultures, mainly because of climates and availability of materials. However, in terms of gardening techniques, there is no huge difference between Lingnan gardens and traditional Chinese gardens. Because of the hot and humid subtropical climate, classical Lingnan architecture tends to focus on thermal insulation, shading, and ventilation with multi-layer slope roof. It is common to use pale colors, such as light gray and white on the façade, and square columns. The layout of Lingnan buildings is freedom and nature. Due to the mild climate, there are large numbers of open structures such as terraces and loggias, shifting people's activities outwards.

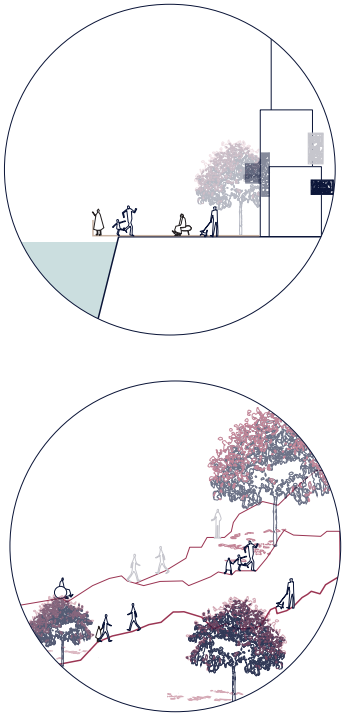


Proposed Hong Kong Airport garden with views.

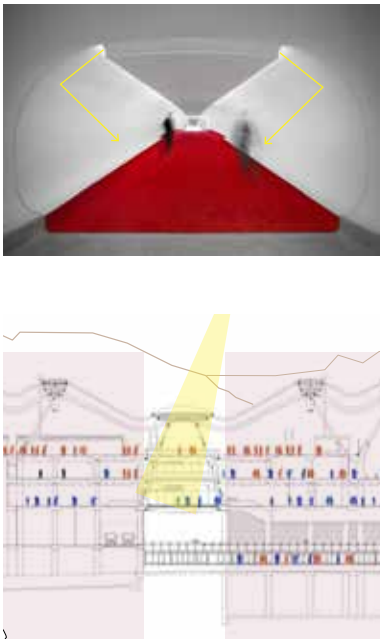
Human scale



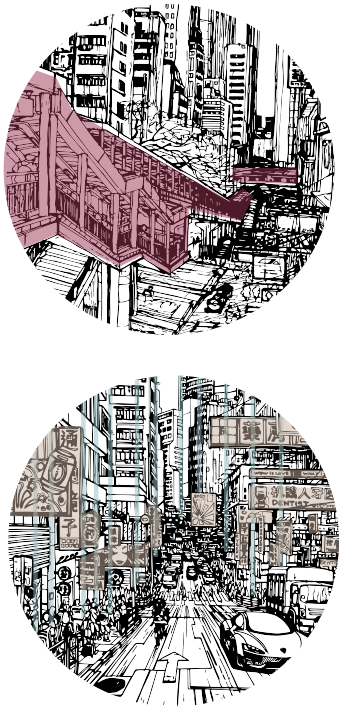
Bring in Nature



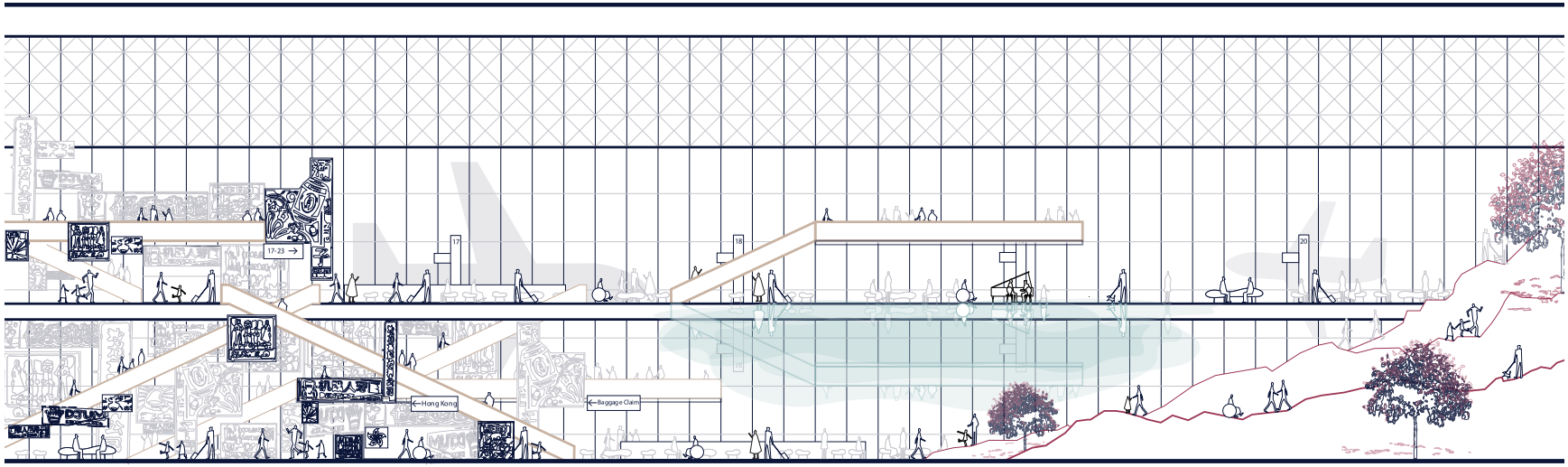
Way-finding
within the airport system



Using local materials and forms



Diagrams of design strategy.



Wish image: long section of proposed terminal design.

Design Strategy

As previously described, the Hong Kong airport is a typical pier-finger terminal with linear programs. Departing and arriving passengers are separated on different floors: the top level for departing and the arriving level right below. The only connection between them is a double space between the main entrance and the check-in hall. Thus, creating the intersections by changing the height of the five passenger paths is crucial for an organic social life between different visitors.

Three gardening techniques are summarized for place-making and orienting passengers in the Hong Kong airport from the three garden studies discussed in chapter 4 and the Hong Kong's urban and cultural characteristics.

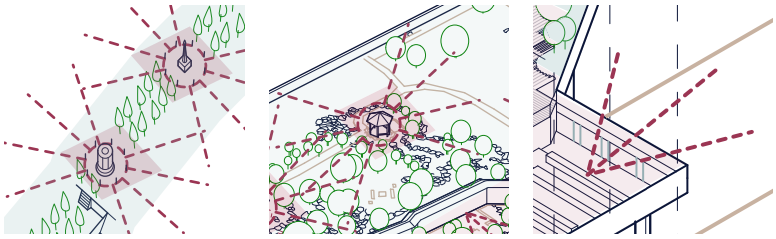
Use of Water

Water is one of the most important elements used in architecture and landscape design and is a key design part in Lingnan culture and Hong Kong. When creating garden paths into the airport system, water can be used as both zone separation and passenger flow guiding elements. The sound of water can help passengers relax, especially in the sequences with high negative emotions.

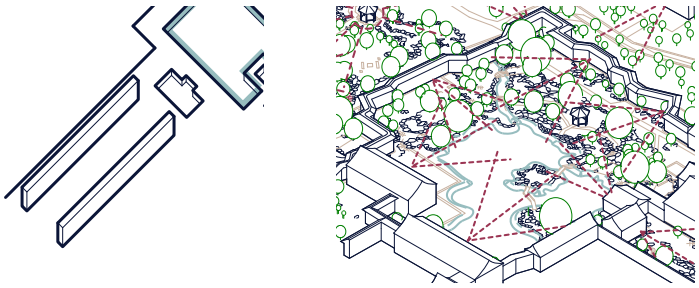
Use of water.

Lookout, Look-in, and Framing Views

Placing several lookout points from the garden staging break up the airport sequence by framing the view into foreground, middle ground, and background. The lookout points are placed in intervals within the sequence to minimise the airport complexity to help visitors find their way through the system. Symbolizing the Lingnan architecture, white walls with tiles are used to frame views for passengers and form a relatively close space in the large-scale room in the terminal.



Look-out pionts.

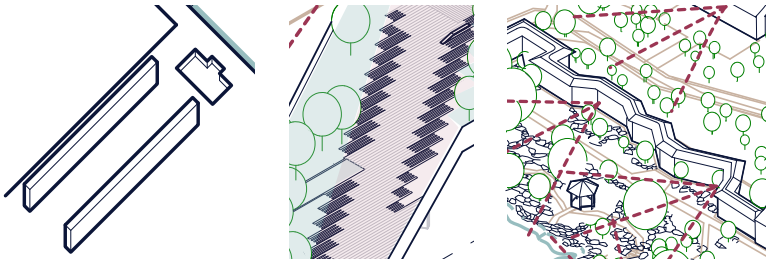


Look in and frame view.

Paving and Planting System

The paving and planting system of wooden paths connects the airport process sequences and helps orient visitors. The winding paths lead visitors to each process sequence and

at the same time prolong the experience duration to ease the passenger’s nerves.



Paving and planting system.

Overall, the thesis proposes wooden paths as the five main paths connecting the airport process sequences; a garden path level is added on top of the main check-in counters to offer self check-in kiosks level to minimize the scale of the check-in hall; a vertical garden with square galleries on both departing and arriving level as the main intersection of the paths; bamboo lightwells introduces nature lighting from commercial level into the security check area, several reflecting pools as zone separation and guidance element, and view decks along the paths for sightseeing and way-finding.

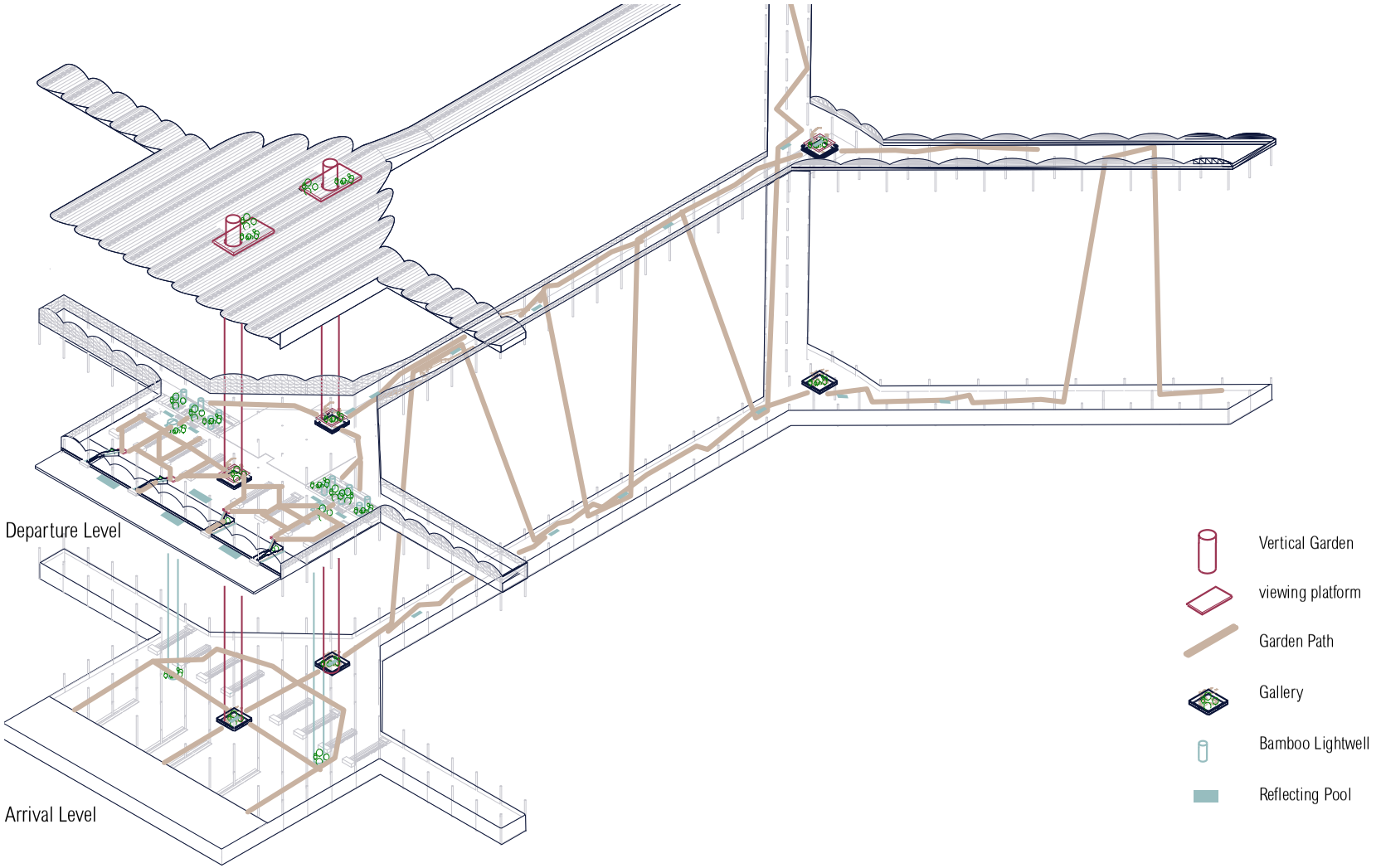


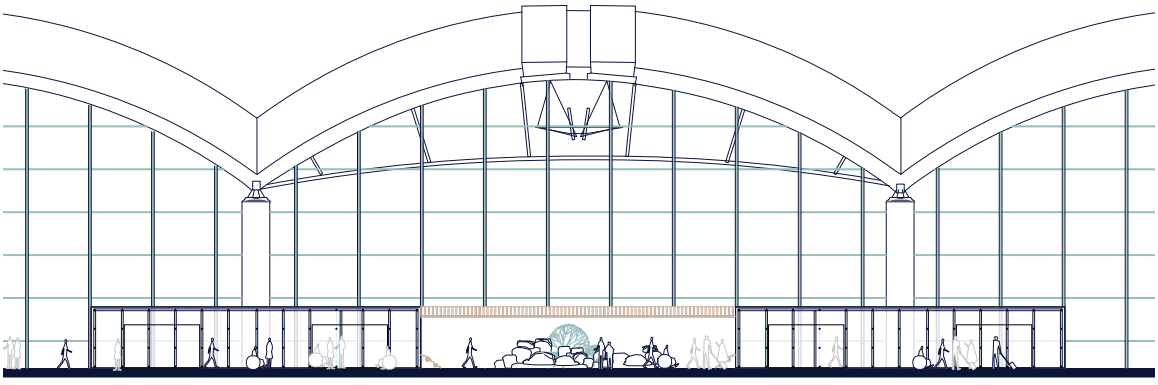
Diagram for the whole airport.

Design

Entrance

When passengers arrive at the airport, the white wall with tiles indicates that they are in a Cantonese garden and allows them to find the entrance faster, because in the existing airport, passengers need to find the tiny glass box entrances within the entire glass curtain wall. Also, the white wall makes the entrance more like a narrow door, which is an architectural feature common in the classical Lingnan architecture, due to the influence of a strong Feng shui culture (Lin 1985, 35). The narrow door, not only serves as defensive purposes in the past, but also expresses the implicit culture of ancient China. Along the white wall, laying several reflecting pools with rockery and plants present the

Garden techniques used in entrance.



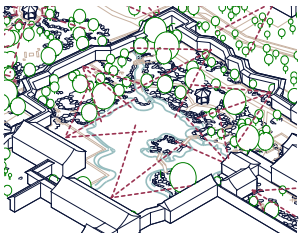
Proposed Hong Kong Airport entrance.

visitor with a view of a pond, rock, grove of bamboo, or a blossoming tree with a pure backdrop of the white wall.

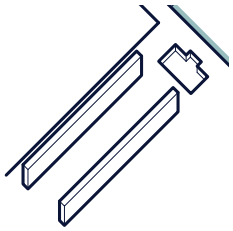
Check-in

When entering the airport, there are two narrow alleys separating the passenger flow. One leads up to the viewing deck with self-service kiosks and self-bag drops, and the other leads down to the main check-in counters. The two alleys are designed as cold alley, which is called the “essence” of classical Lingnan architecture. In the subtropical Lingnan, the cold alley walled on both sides, is designed for increasing the wind speed in the alley to help surrounding buildings ventilating. The use of cold alley here is not for ventilation, but to create a relatively closed space, frame glimpses of the airport, and help passengers gradually adapt to the view of the superstructure, rather than directly showing the entire airport without warning. The two alleys are not straight connecting between the entrance and check-in counter, but have a certain degree of winding, in order to allow passengers to have a different glimpse of the

Use of Water



Look in and frame view



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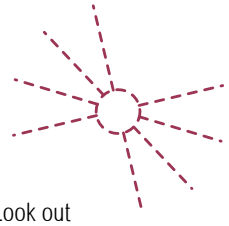


Look out

Garden techniques used in check-in.

airport at each step. Framing by the alleys, a small garden is created. Passengers can get a glimpse of the landscape through the open windows on the alley wall.

Along the upward alley, visitors can reach a viewing platform, in the center of which is a small garden composed of rockery and plants. The uplifted garden paths above the existing check counters are both an elevated thoroughfare and a destination. Surrounding the small garden, there is a passenger's rest area for packing luggage and saying goodbye to family and friends. The platform offers a 3D staging view with the foreground of the check-in counters below and the glass vertical garden in the grand center of the check-in hall, middle ground of the security check bamboo forest, and background of another glass vertical garden in the commercial area after security check. Here, passengers orient themselves and find paths that the platform to destinations. Seating areas with plants and rockery are placed along those paths. Down the alley, there is the existing check-in hall, which also has paths to all places.

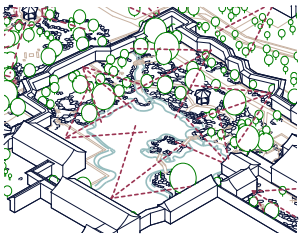
Vertical Garden

There are two vertical gardens proposed in the T1 terminal of the Hong Kong airport. One is in the middle of the check-in hall, second is in the main commercial area right after the security check, and the third is in the terminal waiting area. They are the main intersections of the five user paths connecting the arrival level, departure level, and the roof viewing platforms.

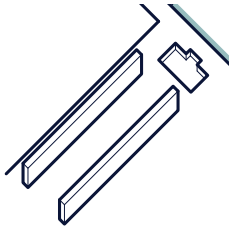
Starting from the arrival level, the 30-meter diameter cylindrical glass garden is surrounded by a square shape gallery. It expresses the cosmology of traditional Chinese

with the fittings of one square end and one round end. The gallery offers rest areas and a meeting point for arrival passengers who just picked up their baggage from baggage claim and blocks the view directly to the glass garden. In the vertical garden, there is a pond with rockery and stairs leading up to the next level. On the departure level, the vertical garden is in the middle of the check-in hall, and is surrounded by a square gallery connecting the garden paths from the entrance and to the security check. Visitors continue to walk up the stairs and will reach the viewing platform level and the roof viewing deck. The vertical garden is also the main path for passengers to come from the viewing platform level, go down to the departure level, and then to the security check. Along the stairs, the vertical garden is set with several floors serving as the new social space in the airport. Isolated by the glass wall, it is a relatively closed space that visitors will not feel overwhelmed by the events of the airport. It can be a small museum for local culture or

Use of Water



Look in and frame view



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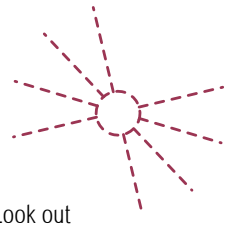


Look out

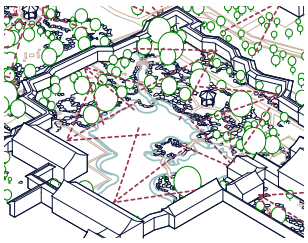
Garden techniques used in vertical garden.

a gallery for installation art works, which is the best place for passengers to pass the time at the airport. On the top of the vertical garden, the outdoor roof garden provides an experience of the airport context, offering the view to the roof structure of the terminal, the airplanes coming and going from the aircraft parking apron, mountains, and sea in the distance.

Security

The bamboo forest in the security check creates a more private space to help stress release. The existing security check is under the commercial level. To bring in natural lighting, each grove of bamboo framed by cylindrical glass wall penetrates the ceiling and extends to the upper level. Along the small landscape formed by stones and bamboo, a rest area is set up for passengers to organize their belongs before and after security check and immigration control.

Use of Water



Look in and frame view

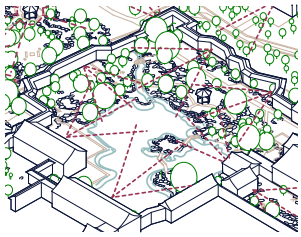
Garden techniques used in security check.

Terminal

The design intention of the terminal is to promote a sense of duration for passengers to take their time and experience the space as an extension of the host city. The design strategy in the terminal is to slow things down by offering

long stairways, meandering pathways, and hidden niches. The garden paths in terminal offer layers of programs, presenting a new boarding waiting room typology for the passengers, and a new territory for tourists to explore.

Use of Water



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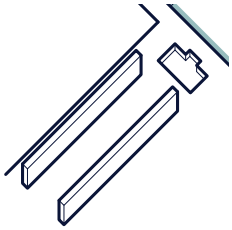

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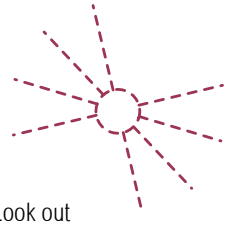
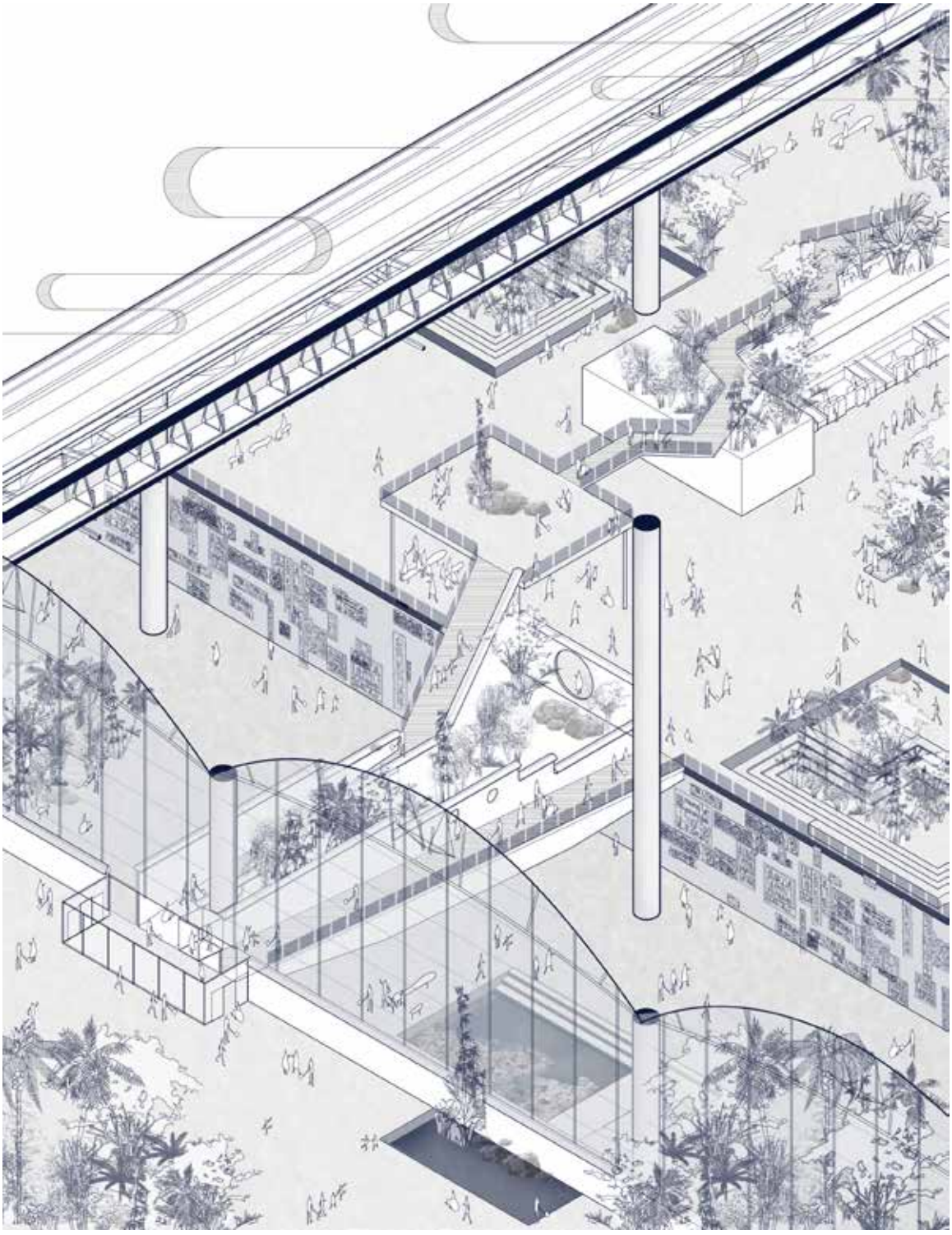
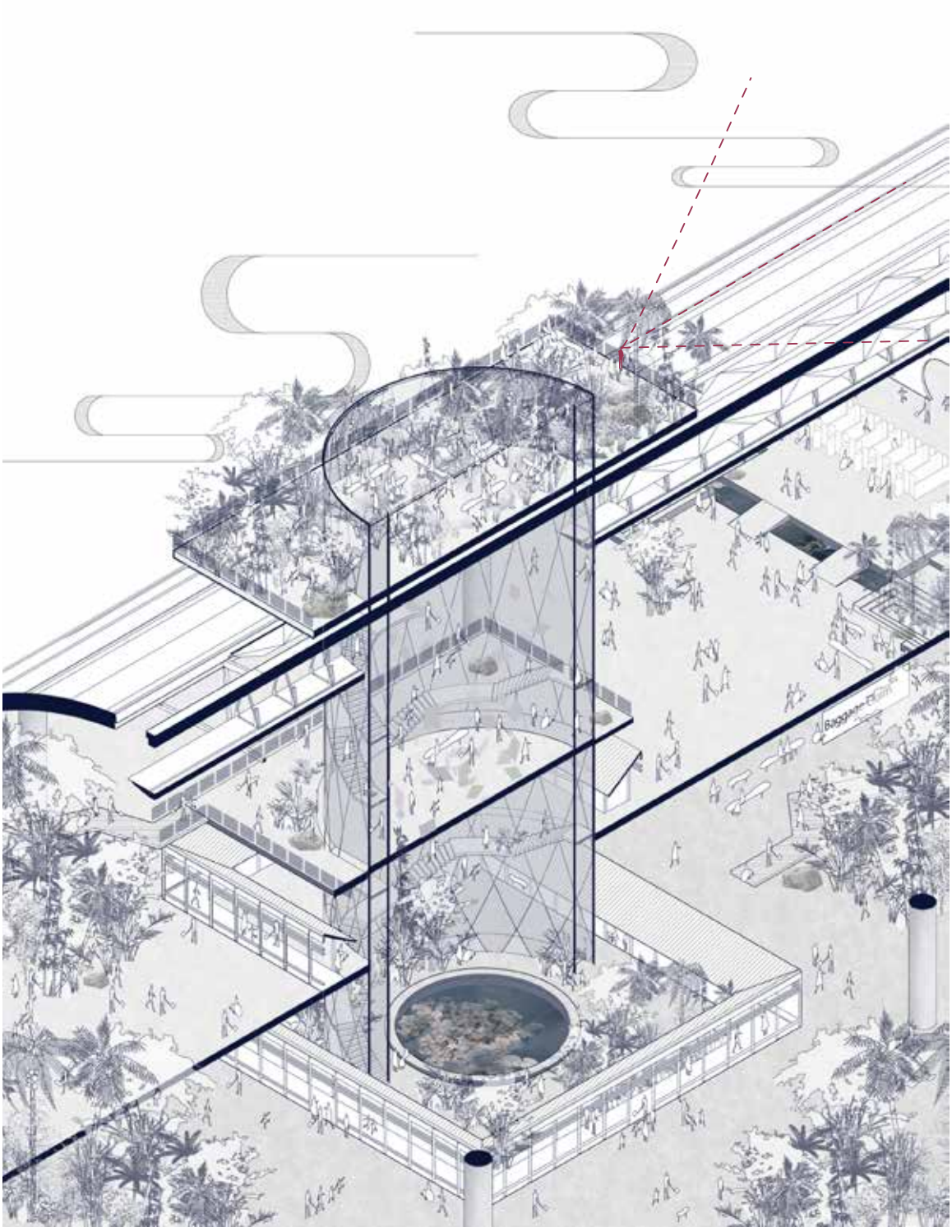


Look out

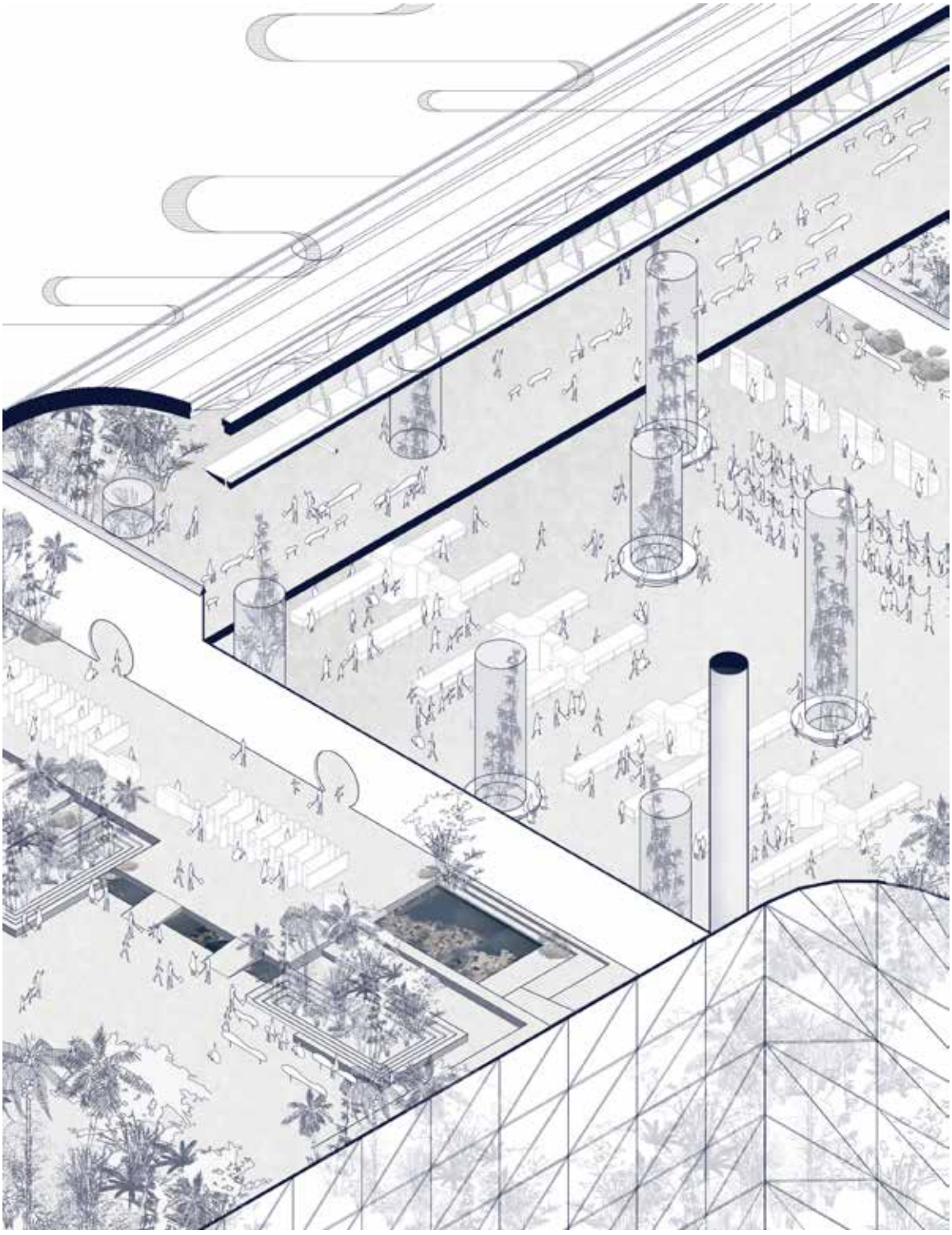
Garden techniques used in terminal.



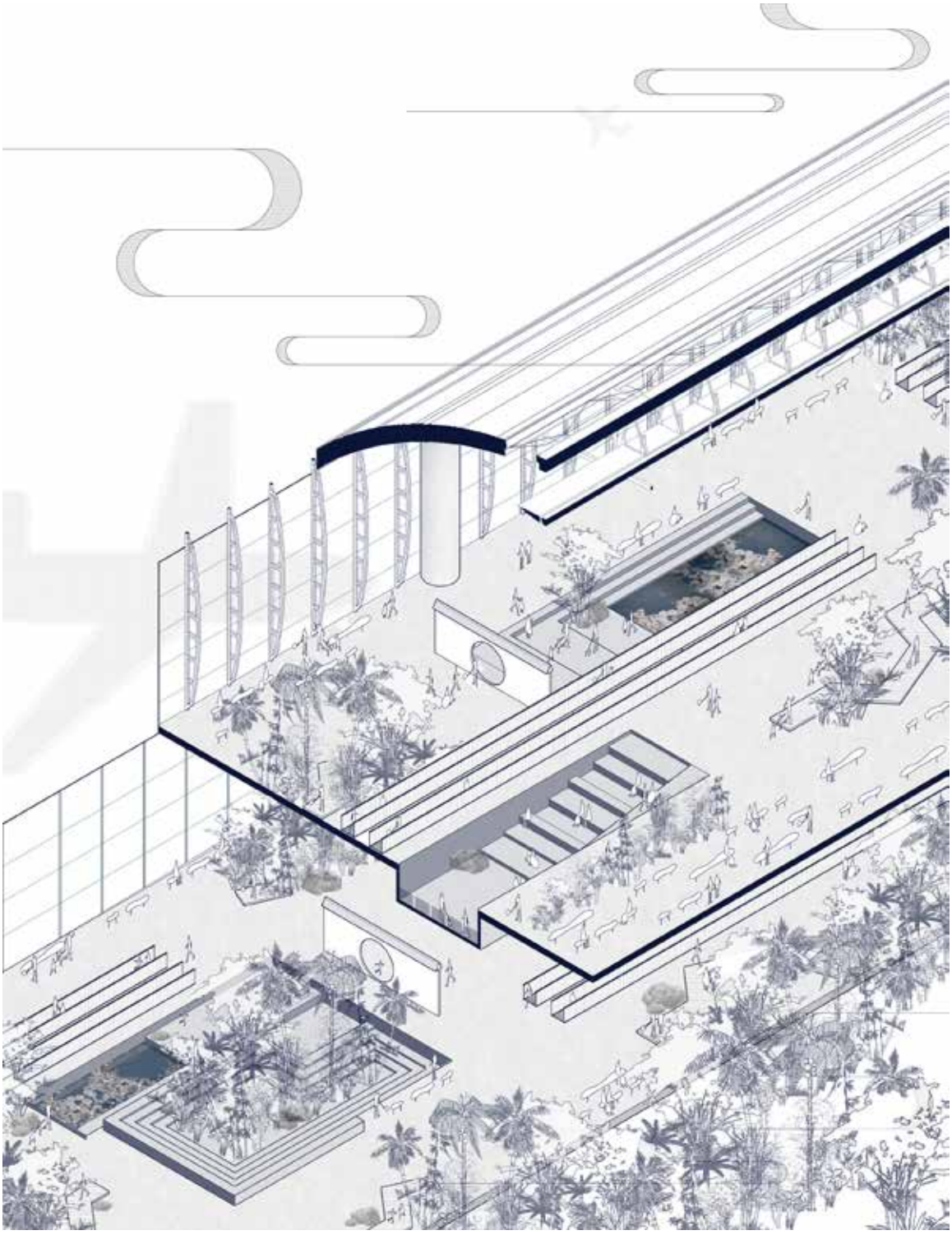
Proposed Hong Kong Airport entrance and check-in hall.



Proposed Hong Kong Airport vertical garden.



Proposed Hong Kong Airport security.



Proposed Hong Kong Airport terminal.

Perspective from the rood top view deck.

Perspective from the terminal showing an active place for visitors to walk around.

Perspective from the terminal showing a peaceful place for rest.

Chapter 6: Conclusion

Flying is undoubtedly fascinating, but the quality of today's airport terminals makes it the most boring part of a person's journey. Airports are often criticized as a machine that is too large and designed without consideration for the scale of a human. It is argued the airport exists within a vacuum, as it does not take the history of the site or the surrounding context into consideration. The thesis aims to develop an architecture method that can be applied to most of the contemporary airports renovation of existing terminals to grow a sense of place.

The thesis respects the functioning character of airports and does not destroy the very properties that made it such an infrastructure phenomenon in the first place: its straightforward pragmatism and linearity and scale that is both intimate and immense at the same time. As a functioning machine, the airports' system and process sequences are unchanged, although airports no longer serve isolated functions. From the research on how the airport functions and existing terminal buildings adapt those functions according to the invariant characteristics of the airport system, the reason why airports are criticized as "Non-place" is summarised. Three scale strategies of urban, system, and room are proposed as the criteria of making a good place.

To express another certainty in the airport, movement, the thesis proposes "The Garden" as the method for connection and social incubation. "The Garden" simultaneously connects the function process sequences through its circulation strategy, and acts as an incubator of metropolitan activity that transforms the airport life events into a new form

of international life. The garden airport is a reflection, not of the functions of the terminal, but of the relationships between the processing sequences. It is a celebration of the state of flux, true to the nature of the airports as infrastructures and functioning machines. It facilitates the passenger circulation, while serving as an inhabitable place that gently balances the threshold between the airport and exponentially growing cities that are reaching past their own boundaries and limits.

The scale of the project is the biggest challenge of the thesis, because the human scale is unaddressed in existing airport systems. The architecture method developed in the thesis is an analytical and conceptual approach to human emotion; and a critical manifestation of urban life and activity, where space, event, and movement all converge into a larger system. The garden path can be applied and adapted to any airports that contain the same functions and process sequences to grow a sense of place. The application of the garden paths merges the circulation with programmed space to form a place that saves time in the process and offers activities while waiting. The garden airport becomes a platform that can accommodate the events of the city. The thesis proposes that the airport is a continuation of the urban fabric, rather than just a journey from A to B.

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