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UMI
big space, little place
and
11 retro-fit, futur-fit strategies for emerging airports
by
alane truitt

A THESIS SUBMITTED
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE
OF MASTER OF ARCHITECTURE

APPROVED. THESIS COMMITTEE:

[Signatures of committee members with titles]

Houston, Texas
May, 1999
abstract

Air traffic has experienced worldwide exponential growth which has in turn sparked off another chain reaction of new expanded facilities for air travel. Although the individual's radius of action continues to expand, space itself is being steadily reduced to a zone that is traversed, an interval in a continuous movement interrupted at most for a brief stopover. Scarcely anybody has a clearly formulated opinion about this transit zone, accepting it as inevitable. Within the last decade, airports have become such complete facilities dedicated to commerce or exploiting commerce opportunities based on the necessity of passing through and waiting. Within this system of shifting scales, economic intricacies, infrastructural units and individual experience, there is an opportunity in the expansion of airport facilities to exploit the inherent qualities through means that are more responsive to and change the individual experience of airports.
it makes for a good day for some serious reflection and massive rationalization for contemplating the future of the future, and the last of the past
GOOD INTENTION lyle lovett

To my committee:

Michael Bell, thank you for your support and enthusiasm throughout the long journey.

For your patience with deadlines, Fares el-Dahdah, thanks.

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you will continue to burn brightly

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Most importantly, my deepest thanks to Dawn Finley, without whom, this wouldn’t have been possible.
Thank you for caring so much and working so hard simply because I asked.
Today, there are 43,167 airports.
airport personnel comprises the largest daily work force
Airport personnel comprises the largest daily work force in the world operating 24 hours a day, 365 days a year. The present flight patterns took over 10 years to assimilate and perfect and the industry has grown to the point that there is physically not enough space on the ground to store all commercial aircraft. It is a complex, sophisticated organization of timing involving the coordination of private and public industries, government agencies, infrastructure units, economic markets and network communications. This parallel organization and perpetual operation of airlines, FAA and networked flight patterns operates on the global scale, choreographing all aircraft movement.

The individual airport includes facilities which serves (terminal), exploits (rental cars), leeches off of (hotel, gas stations, restaurants), enhance (city office), is a subsidiary of (air cargo, catering), are necessary for (air traffic control), or just plain fun to have around (golf course, etc.) the taking off and landing of planes. The airport is a sophisticated system of infrastructural units comprised of their own roads, traffic laws, police force, emergency response unit and communication centers which operate independent its' host city. This infrastructure and dependent facilities make the airport a modern catalysts for urbanization. Often, this development is accompanied by the decline of the city center leading to a complete transformation of the concept of the classic city as a self-contained entity. This scale and global connection creates a context of airports as enclaves functioning independent from the city they serve. These enclaves are growing in number and size, turning cities and urbanized regions into a succession of autonomous worlds that have little or nothing to do with their surroundings.
As a sign of the in-transit condition becoming universal, there have been 5 major new airport which have opened within the last year alone.

The city of Austin, Texas is redeveloping the former Bergstrom Air Force Base into a new airport to replace the existing Robert Mueller Municipal Airport as part of the city’s goal to make Austin “the most livable community in the country”. The city initiated an airport master plan taking 7 years to coordinate the design and construction on 4,100 acres costing $685 million. The airport opened in May 1999 with 20 gates to be expanded to 55 by 2002. The airport is projected to serve 5.9 million passengers a year and began operation with 9,000 parking spaces. Austin Bergstrom International Airport is a destination/arrival airport only not serving as a hub for connections and layovers.

Because huge expanses of land are necessary for the construction, airports are located on the perimeter of any urban area however this spaciousness lasts only a few years. The airport acts as an urban generator bringing new development to the area around the airport. It is anticipated that over time Austin Bergstrom Airport will encourage development in a 8-10 mile area surrounding the airport with 725,000 square feet of new development expected to be drawn to the new airport and immediate surrounding areas.

Airport construction is expected to create approximately 4000 new jobs on site with payroll of 275 million dollars. By the year 2012, the airport is expected to generate 16,000 new jobs with 70% of these being airport operations.

The new Hong Kong International Airport and Chek Lap Kok terminal is considered to be the eighth wonder of the world. This new facility will soon become the hub of Southeast Asia with half the world’s population located within a 5 hour flying radius.

Constructed on a new island made from 2 former islands, the airport took 5 years to complete at a price of U.S. $20 BILLION. The terminal, by Sir Norman Foster took 3 years to complete and cost $1.2 BILLION.

The airport will serve a capacity of 35 million people a year but has facilities to expand up to 80 million by Year 2040.

Another big difference between these two airports is Hong Kong’s terminal includes over 30,000 sq.ft. of SHOPPING!
The major airport have grown into complex and multifaceted megastructures that not only offer space for more terminals, piers and hangars than ever before, but also accommodate a growing number of function that have nothing whatever to do with aviation. In many cases, these other function make a bigger contribution to airport turnover than activities directly connected with air travel. But now that shopping has become more popular than sex, airports provide what they believe their customers want. Airports today are little more than discount shopping centers on a grand scale. Retail is a financial foundation for airports with over 40 percent of revenues coming from retail sales. Travelers are schooled in the narcissism of small differences acquiring weird powers of connoisseurship with tiny distinctions taking on extravagant meaning. The first attempt at retailing was in only ten years ago in Portland, Oregon as a strong effort to provide good food and products to serve as a showcase for this region. A company called B.A.A. was created in Britain as part of Thatchers privatization campaign to successfully expand the retailing at Heathrow in London now has contracts at major airports including LaGuardia and JFK to expand their retail facilities.

Pittsburgh’s airport is a big US Airways hub with 70 percent of their passengers changing planes. They abandoned airport retailers tradition practice of price gouging their captive audience and instead began charging the same as nearby malls. Pittsburgh airport averages $8.35 in sales per passenger. The national average is $5.35 from each passenger each year.

For the city this is money falling out of the sky and if travelers’ preference for the airport draws more flights, revenues from landing fees, the chief source of income for all airports, also increase substantially. Retailers at Pittsburgh average $1000 per square foot of space each year compared to 250$ in a regional shopping center. Airports are a very predictable place to do business. Businesses know exactly when people are coming so they can plan staff and the audience has an above-average income.

The largest generation of revenue for the airport is in landing fees from the airlines. The logic for the airport is that there is every reason to increase its’ size and facilities to draw more passengers requiring more flights and generating more landing fees. One way that the cities feel they can draw more people in is by making an airport more of a destination or a place one would want to be if they had to have a layover. Today they have accomplished this through shopping.

Retail developers are less concerned with the drama of airport architecture than they are with the quality of what they call the airport experience. This translates into impeccable cleanliness, a calm, pleasant atmosphere that allows passengers to relax, and a variety of high-quality mostly national-brand retailers and restaurant whose prices are the same as in their outlets outside the airport.
The airport terminal is a transparent system of ticketing, airline coordination, security, luggage, and signage to bridge the gap between car and plane. It is a waiting area for arriving and departing passengers, a station for ticket and passport control, a place where luggage is handled. They even have their own public transportation system, but today they have grown into complete facilities with restaurants, bars, banks, boutiques, supermarkets, hairstylists, etc...

It is a hermetic entity, a closed environment; you can leave the covered area but once outside, you find yourself in a void. The airport is a permanent structure built for a temporary stay. You are neither here nor there; you are simply passing through. But what differentiates this from the city is the airport is a permanent structure built for a temporary stay. It is a system of movement and waiting. You are neither here nor there; you are simply passing through creating a temporary dwelling wrought with irony and tension.

Airports have become such complete facilities dedicated to exploiting commerce opportunity based on the necessity of travel and the enforced waiting associated creating a temporary dwelling wrought with irony and tension.

One is always trying to hurry but force to wait to complete their next action; whether that be advancing in line to hurrying to the gate only to wait for the time to board the plane or to hurry through the airport to wait in line for your luggage or to just wait for time to pass before catching the next flight.

The terminal is a fertile ground for sociological research into an intriguing form of human behavior; killing time while waiting. The enclosed world of the terminal is inhabited 24 hours a day by huge numbers of people, often from all corners of the world who are there more or less of their own free will but who must submit to an enforced stay in the company of fellow travellers with whom they have absolutely no connection. Jet lag is built into everyone’s biological clock and time and place become utterly relative.
inherent qualities of airport terminal

1. connection/disconnection
There is a network connection to other airports and a disconnection from any sense of location or proximity as you enter into the world of the airport.

2. program = circulation
Impatience reigns at the airport as no one wants to move any slower, stand in line, or wait.

3. waiting - with varying degrees of duration
One waits only until you can perform your next action, which is to move, whether getting on or off the plane or to take the next step in line or just waiting for time to pass.

4. density
Atlanta tops the world ranking with 69.3 million passengers travelling through its airport each year and one's movement or waiting is on average in relation to 7,000 other individuals.

These qualities affect how other programs and services within the system operate and are articulated. Programs are to be occupied for a brief period of time and spaces are organized for maximum efficiency of movement.
Q. Architects in particular, if they do choose to analyze an institutional building such as a hospital or a school in terms of its disciplinary function, would tend to focus primarily on the walls. After all, that is what they design. Your approach is perhaps more concerned with space, rather than architecture, in that the physical walls are only one aspect of the institution. How would you characterize the difference between these two approaches, between the building itself and space?

M.F. I think there is a difference in method and approach. It is true that I do not, architecture, in the vague analyses of it that I have been able to conduct, is only taken as an element of support, to ensure a certain allocation of people in space, acanalization of their circulation, as well as the coding of their reciprocal relations. So it is not only considered as an element in space, but is especially thought of as a plunge into a field of social relations in which it brings about some specific effects. . . . So in the history of techniques it takes years or even centuries to implement them. It is certain, and of capital importance that this technique was a formative influence on new human relations, but it is impossible to think that it would have been developed and adapted and there not been in the play and strategy of human relations something which tended in that direction. What is interesting is always interconnection, not the priority of this over that, which never has any meaning.

Q. So there is a change in the importance of space. In the eighteenth century there was a territory and the problem of governing people in this territory or one can understand a city as a metaphor or symbol for the territory and how to govern it. All of this is quite spatial, whereas after Napoleon, society is not necessarily so spatialized . . . .

M.F. That's right. On the one hand, it is not so spatialized, yes, at the same time a certain number of problems that are properly seen as spatial emerged. These spatial problems, which were perhaps not new, took on a new importance. Second, a new aspect of the relations of space and power was the railroads. . . . the development, which came later, was electricity. So there were problems in the links between the exercise of political power and the space of a territory, or the space of cities - links that were completely new.

Q. So it was less a matter of architecture than before. These are sorts of techniques of space...

M.F. The major problems of space, from the nineteenth century on, were indeed of a different type. Which is not to say that problems of an architectural nature were forgotten.

Q. Architecture itself, the École Des Beaux Arts, belongs to a completely different set of spatial issues.

M.F. That's right. With the birth of these new technologies and these new economic processes, one sees the birth of a sort of thinking about space that is no longer modeled on the police state of the urbanization of the territory, but that extends far beyond the limits of urbanism and architecture.

Q. Consequently, the École des Ponts et Chaussées . . .

M.F. That's right. The École des Ponts et Chaussées and its capital importance in political rationality in France are part of this. It was not architects, but engineers and builders of bridges, roads, viaducts, railways, as well as the polytechnicians who thought out space.

Q. Has his situation continued up to the present, or are we witnessing a change in relations between the technicians of space?

M.F. We may well witness some changes, but I think that we have until now remained with the developers of the territory, the people of the Ponts et Chaussées, etc.

Q. So architects are not necessarily the masters of space that they once were, or believe themselves to be.

M.F. That's right. They are not the technicians or engineers of the three great variable - territory, communication, and speed. These escape the domain of architects.
retro-fit, futur-fit strategies for emerging airports
on the ground, there is physically not enough space to store all commercial aircraft
a roof park above any terminal, can be designed as an element of new airport cities or introduced easily into existing airports. Components include: 1. an elevator shaft, which is both the access point, structure, and drainage chase for 2. a steel reinforced slab upon which 3. materials including concrete, sod, soil, trees, and rock; 4. furniture, including benches, canopies, ashtrays, lighting, and pet-poop disposal units; and 5. programs, including cafés, ice cream, stands, smoking, pet walks, making out, reading, making out some more all are deployed.
the new airport in Kuala Lumpur
averages 7,130 passengers per peak hour
Meet people at ①, play ②, ③, and ④.

The source game includes:
- 9x4’x50’ field
- 4x15 min rounds
- 2 goals & 1 ball
- 2x5 players

Fast play (1) vs. slow play (2) depending on waiting time:
- Fast: 5 min increments, rotate every 5 min.
- Slow: 15 min increments, shoot, walk, meet people.

In
since commercial flight originated,
the number of passengers has doubled every 15 years
Airline attendant scheduled to depart from L.A. at 3:46 arrives at Terminal 45 minutes early to drop off 2 flight jackets and access personal space closet #11 where uniform accessories and toiletries kit are stored. Personnel storage units located near larger rest-rooms that accommodate changing/preparation.

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24 hour duration personnel space closets are accessed using credit card or airline currency card with additional to confirmation code; closets are conveniently located near rest-rooms equipped with changing facilities.

Mobile dispatch units are loaded at the dry cleaner hub-counter according to customer reservations and confirmations of pickup. The units are then positioned in designated gate arrival territories. Each unit contains 12 personal space closets, as well as additional vending machines for grooming products/toiletries. Space closets typically contain dry-cleaned suits, stored by passengers aware of upcoming travel: the service allows individuals to arrive in casual dress, access personal business attire, change, and proceed to business travel meetings, wrinkle free.

Thank you! We appreciate your business.

Personnel space closets
business passenger arriving at 3:37pm from Atlanta for bimonthly meeting with consultant. Travel arrangements include an aisle seat, frequent flyer upgrade, reservation of rental car, confirmation for pickup of dry cleaned suit from personal space closet near arrival gate, & reservations at Boulevard Bistro.

Mobile dispatch units are loaded at the dry cleaner hub-counter according to customer reservations and confirmations of pickup. The units are then positioned in designated gate arrival territories. Each unit contains 12 personal space closets, as well as additional machines for grooming products/toiletries. Space closets typically contain cleaned suits, stored for passengers aware of upcoming travel. The space allows individuals to arrive in casual dress, while personal business attire, change, and professional needs to business travel meetings, wrinkle free.

Thank you! We appreciate your business.

Personal space closets are accessed using credit card or airline currency card in addition to airpress confirmation code: Closets are conveniently located near rest rooms equipped with changing facilities.
Hong Kong's new airport is considered an investment at
U.S. $20 BILLION
capsule hotel rooms
The value of a comfortable sleep at the airport is available in durations of 15 minutes. Personnel would be needed to monitor the activity, change the linens, etc., creating another cycle of occupation and activity.

club class
Airplanes and airports can provide social or group meeting opportunities.

components:
terminal and planes club class seating areas
In the plane, instead of narrow seating, this is accompanied by no seating assigned perimeter seating can be moved up or down to create arrangements.
There are adjoining waiting areas dispersed throughout the terminal.

application:
Individuals can meet before boarding the plane and choose who they want to sit with. These areas are also used for meetings, social events, etc.
Malls and airports now feature social areas and seating areas for passengers and passengers alike. Instead of back-to-back seating, this is an open area seating assignment. Continuous linear seating can be folded down to create multiple seating elements. The adjoining waiting areas are dispersed throughout the terminal.

Conclusion:
Travelers can meet each other before boarding the plane and decide where they want to sit next to. These areas are also used for business meetings, social events, etc...

Self-service merchandise machines
These machines provide the fastest and most convenient monetary exchange for merchandise.

Components:
Vending machines located throughout the terminal which are privately owned and operated. These machines sell a variety of merchandise like, gum, cola, snacks, magazines, books, toiletries, perfume, etc. However, if one does not have the correct change, cellphone users can purchase merchandise by calling the posted number on the machine which electronically activates the vending. Press a button and the merchandise purchased is charged to your cellphone account.
NASA designed the new supersonic jet which, for only 20% more than standard plane fare, can cross the Atlantic in half the time at 1,500 miles per hour.
A room inside a room with a suspended floor, all surfaces in the quiet room are covered with sound-absorbing foam. Similar to an anechoic chamber, the room neither has nor produces any echoes. It is completely silent. The quiet room provides an extreme in comfort to passengers needing an escape in the airport.
the McDonald's with the highest grossing sales
is located in Schiphol Airport,

serving 700,000 hamburgers a month
observation theater
When the horizon disappears, what then appears is the horizon of disappearance.

(Dietmar Kamper)

Airport Space is Post-Spectacular Space. As a largely interior experience, the airport has usually filtered out the mechanisms of travel. Only through minimal glazing at terminal gates may airplanes be viewed docking and departing, landing and taking off. The waiting areas and corridors within airports are dead spaces, unnecessarily sheltered from the activity taking place on the tarmac and in the control tower.

What the future airport-city requires is an observation theater in which the physical and virtual tracking of aircraft may be monitored in real time. This theater would provide stadium seating with views of the runways as well as large screens relaying up-to-date information from the control tower. It would be an easily accessible appendage to the typical terminal core, for some replacing the airport chapel in function.
the new Chek Lap Kok terminal is
the largest enclosed public space under one roof
with 3 times as much air-conditioning
as the tallest skyscraper on earth
In the same manner that people are increasingly identified by a number or numbers (ex: Driver's License Number, etc.), the perpetually expanding amount of airports may soon be designated progressively 1 through 43,167 the struggle would begin for airports to acc
After all, your identity is a commodity to be marketed, promoted, and particularly for airports, become increasingly apparent that actual location is unimportant and image will be everything.

Yuma (AIRPORT # 24792):

Rome (AIRPORT #38): XXXVII

Washington D.C. (AIRPORT #1776):
City officials have been working frantically for two weeks to unload the 3886 in favor of a more "comforting" number.

"People think of Tucson as a pleasant place to have a layover," said Mayor Lynne Short. "We certainly don't wish to be identified on the list of Hell!"

Tucson, AZ recently found a taker on this offers of $388 million to swap its code.

The new code will go a long way up here," said Mayor Michael Chappel. "We're working hard with AIRPORT #3886. Our traffic is strictly local bush pilots and tourists. If anything, #3886 will put us on the map."

Los Angeles, CA.- An heated debate over the code for the early morning break was finally resolved between the Los Angeles Chamber of Commerce and the Boeing B-29. The new code was finally agreed to by the Transportation Committee for the right to call their major airport "AIRPORT #3886."

"The elimination of the "919 offer by the city council was the largest to come up on our airports," said one official."

"We couldn't be more pleased that our cities to Las Vegas will be landing on code 919 on their lucky number since they arrived. This truly is a win-win situation for all," said Mayor Short."

Airliners from both Los Angeles and Phoenix will now use the new code for the airport. #919

In a bizarre twist of fate, two...
a strain of virus was traced back to infection at the
Hong Kong International Airport

the particularities of this virus
are recognized as “airport flu”
347,000 cubic meters of rock, sand and mud were blasted up -
10 tons a second for 31 months -
to reconstruct the land for the Hong Kong International Airport
LUCKY 7 AIRPORT TIME/EVENT DURATIONS DIAGRAM

DAY ONE
- tarmac scramble with loud brass classical music
- check-in
- fast food and alcohol bars
- five entertainment needs
- voluntary cavity search
- bell hop baggage handling
- recreational path (e.g., jogging, go carts, horses)

DAY TWO
- park/nature needs
- gym
- video, computer, cinema, symphony, and theater needs
- capsule hotel needs
- diners and monkey tonks
- clean clothing needs

DEPARTURE ONE
- "I need to get the Heil on the plane"

DEPARTURE TWO
- "I missed the first plane, but who cares"

DEPARTURE THREE
- "I'm hung over and should really leave"

DEPARTURE FOUR
- "Better leave before I run out of money"
DAY THREE

ELLIPSE SIZES REFLECTS POSSIBLE SPACE SIZES

long term employees/guest housing

grocery needs

forfeit ticket fare goes to FAA
health inspected and retested male/female prostitute of your choosing

DEPARTURE FOUR
"Better leave before I run out of money"

DEPARTURE FIVE
"I suppose I should get on the plane"

DEPARTURE SIX
"It was fun while it lasted"

DEPARTURE SEVEN
"I need to get the Hell on the Plane"

DEPARTURE FOUR

DEPARTURE FIVE

DEPARTURE SIX

DEPARTURE SEVEN

video, computer,
cinema, symphony
and theater needs

restaurants and
clubs

clean clothing needs
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