

the airport terminal

*“The works of the past always influence us, whether or not we care to admit it, or to structure an understanding of how that influence occurs. The past is not just that which we know, it is that which we use, in a variety of ways, in the making of new work.... The typology argument today asserts that despite the diversity of our culture there are still roots of this kind which allow us to speak of the idea of a library, a museum, a city hall or a house. The continuity of these ideas of type, such as they are, and the esteemed examples which have established their identity and assured their continued cultural resonance, constitute an established line of inquiry in which new work may be effectively grounded.”*

the airport terminal.



*Emerging as a program merely a century ago, the definition of an airport is still evolving with new needs of travelers, cities, and nations. Today airports are becoming intermodal hubs for cities, places of business, and destinations in of themselves. With these new roles, the security of an airport is of increasing importance, as is the airport's role within the city. It was our intention to create an airport with transparent security, and one that would integrate itself into the fabric of the city.*

## Defining the Air: The evolution of the idea of the airport.

Before stepping into the idea of securing an airport, it's important to understand the airport's cultural relevance. What an airport should feel like, what it should look like, and how it should function. Without first understanding these, security can deflate an airport, creating jails of what can and should be beautiful, open, and free spaces.

The airport was invented in the early 1900's some years after the initial flight of the Wright brothers. Usually consisting of little more than a plot of grass. World War Two marked the beginning of plane travel as we know it today, providing significant technological improvements to make plane travel a safe and viable means of transport. Soon after the war, plane travel became the standard for corporate growth, being made use of by top businessmen and celebrities of the 40's and 50's. These users provided the push for the airport to grow from private grounds, into real public places.

It was in Europe that the airport first began to take form, often modeled after train stations. "First generation airports in Europe were designed to function as national gateways. Historical themes were alluded to. ... there was virtue in the idea of a gateway or temples, with single, narrow openings onto the field to evoke a ceremonial sense of entry and departure."



(Gordon.) However, these terminals were still crude in providing a real passenger experience, passengers boarded planes directly on the tarmac, hangers were often part of the terminal building itself, and little was done to control wind and sound.



As air travel became a safer means of travel, and its use grew to the general population, the airport's form also changed. In the 60's Saarinen built what many regard as the perfect architectural airport, JFK Terminal Five. Far from the grounded architecture of Greek and Roman temples, Terminal Five attempted to create a new and light architecture for the airport. "The shapes of the vaults were deliberately chosen in order to emphasize an upward-soaring quality of line, rather than a downward gravitational one"(Saarinen). Every detail, from the signage to the ductwork, had been thoroughly thought through in order to provide a new experience for the airport user. The departure sequence was not simply stepping from the tarmac into the plane, but a romantic experience as described by Alastair Gordon,



*“When his flight was announced, he walked up the long umbilical departure tube, turned once to wave, like an astronaut, and then disappeared into the satellite at the far end of the tube. There was an otherworldly, Twilight Zone quality to this moment – as if my cousin were flying not to London but to Mars. Perhaps it was the subtle rise of floor that made the boarding tube seem hyper extended, much longer than it actually was. All I knew was that I didn’t want to leave just then. I wanted to savor the moment.”*  
(Gordon.)

This was the experience of the airport, something as magical as the experience of flight itself.

Unfortunately after Saarinen’s great leap into defining airport architecture, terrorism forced a re-examination of all the principles he had set out. While Saarinen had created an entirely open and free form building, it wasn’t secured, and nearly 10 years after it opened much of it was closed and boarded up due to increased terrorism.

While terrorism seems a modern word primarily associated with the happenings of 9/11, it actually began affecting airport architecture in the early 70's

“One of the most audaciously planned actions happened on December 17, 1973, when a band of Palestinian terrorists opened fire inside the terminal at Leonardo da Vinci Airport in Rome. They took ten hostages, ran onto the tarmac, and set fire to a Pan Am jetliners, killing thirty passengers. They then commandeered a Lufthansa plane and threatened to crash it into the ancient center of Athens.

In response to these assaults, airports adopted strict security measures. Special forces were armed with machine guns and stationed inside high-risk terminals. Passengers who had once been treated like royalty were now assumed guilty until proven innocent. They were questioned before boarding. Individuals who looked suspicious or seemed nervous were singled out for interrogation. Bags were inspected by hand, while bomb-sniffing dogs searched cargo bays. Some airports, like London's Heathrow, installed screening devices – ‘electronic gallows’ as they were called – through which departing passengers were required to walk. But the new equipment was expensive, and most airports continued to use old fashioned methods of visual inspection.

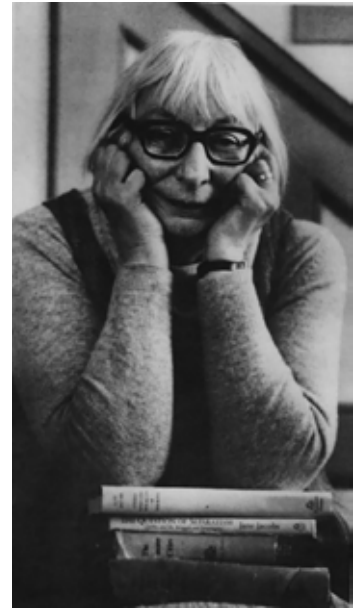
Interior spaces no longer flowed together but chocked to a standstill at security throats, causing backups and short tempers. Moments of departure anxiety were aggravated by the sense of being funneled up another chute like a herd of cattle. In many cases, the screening devices were manned by poorly trained personnel, adding further to a sense of violation”

This was the new airport architecture, large, bulky, undefined, bottlenecked, prison-like. New airports were quite literally designed by architects who designed jails, worse was the Brutalism which informed the architectural style. Thirty years later, terrorism again is demanding a re-examination of airport security, it quickly became apparent that even the largest walls and closed off views cannot stop terrorism from occurring in airports. What is needed is an architecture that informs security through means beyond bulk, an architecture that can remain true to Saarinen's ideal, while also being more secure than any of the bunker's created in the late 70's and 80's. And an architecture that allows for cultural survival free of fear.

## **Safety in Programming:**

### **Jane Jacobs and Berlin Templehof Airport**

When designing for safe airports, safe cities, safe public spaces, the key is not in overbuilt buildings, but in the prevention of attacks. It's next to impossible to prevent toxic gas from spreading once released, or create a space that's impenetrable to bombing. But what is possible is prevention, prevention through means of programming and architecture. Programming when done correctly can create safe environments without the need for more personnel or high technology. Jane Jacobs put it best when she spoke of citizen's creating safe city streets.



“The safety of the street works best, most casually, and with least frequent taint of hostility or suspicion precisely where people are using and most enjoying the streets voluntarily. And are least conscious, normally, that they are policing.” (Jacobs)

What's different about streets and airports is that the airport is a temporal place. There are no constant inhabitants, no street watchers, no regulars. In the creation of a new airport type, changing this was key. Creating a place that was as useful to the community as it is to the airport user. Creating

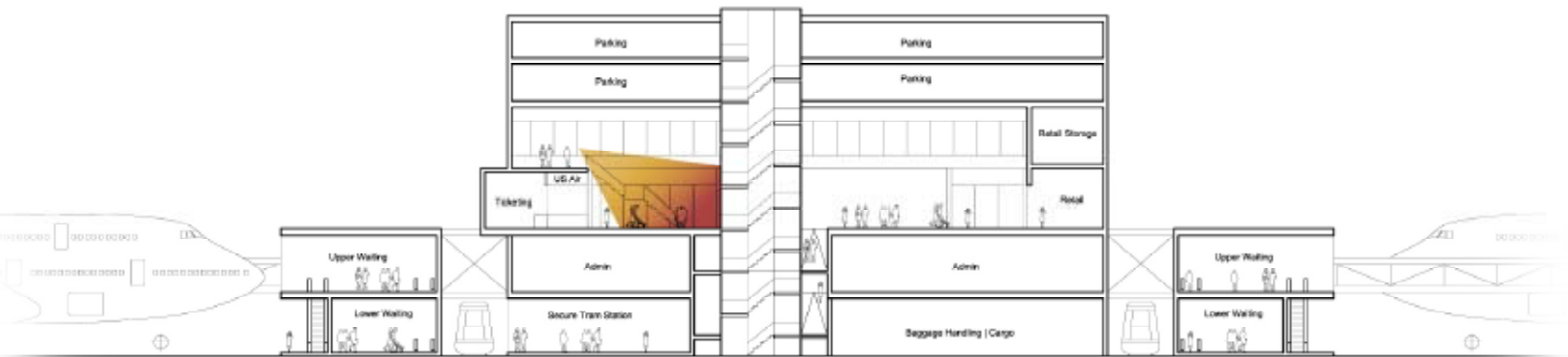




a place where lingering occurred, and where “people watching” could take place actively. Creating a familiar place, rather than foreign. Like Jacob’s described the ‘projects’ as being isolated islands, airports are the same, they are rarely integral parts of the city, and have become targeted locations for crime because of their status as islands.

In our competition, we decided to reverse the current role of the airport. Integrate it directly with the city, rather than let it serve as a gateway, let it serve as another city street. This meant integrating diverse uses along the whole of the airport, integrating community centers, business centers, theatres, and restaurants.

Each of these uses, combined with proper placement, can also encourage greater security of the overall airport. Restaurants for instance, enclosed as they are in many airports, can do very little. But by opening them up, creating street-front patios, café’s on mezzanine levels, not only creates a great atmosphere, but also increases the amount of people watching. Eyes to spot unusual behavior, protect children, and stop crime that is impossible to continuously monitor with surveillance equipment alone.



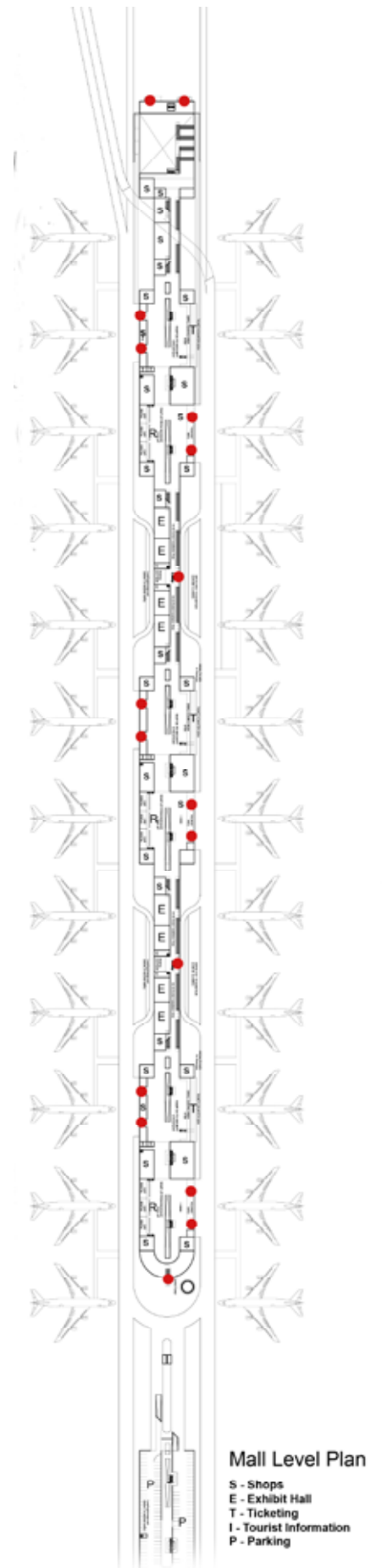
We designed our airport using with the principles of theatre in mind. In section, the mezzanine level serves as an observation deck to the security entrance and the main mall corridor, the largest non-secure area of the airport. The mezzanine is filled with long-term uses, such as restaurants and cafes.

Along with encouragement of lingering, we thought it important to make the airport publicly accessible, to encourage it's diversity of use, to encourage a lively street life, and users that are familiar with the airports happenings. Jane Jacobs eloquently describes, "A lively street always has both its users and pure watchers". And the more users, the more watchers.

The argument could me made that more users, means less security on the basis that there's an increased use, and that would allude to an increased risk in terrorism. But, weather or not the airport is being used by only airport users, or the whole community, the terrorist will still find it an ideal place to target. By increasing it's use, the only factor that is changing is the amount of eyes on the street.

To provide successful use, it means bringing in people at all points along the airport. For our airport this meant bordering it with two public highways, with access points all along it's border, serving various public and private uses, such as a hotel, conference centre, community centre, and theatre. However, while busy use is desirable, large line-ups, and uncontrolled crowds are ideal spots for terrorism. They're difficult to monitor due to the density of people, and confusion within crowds discounting the ability of 'people-watching' to work effectively. The division of entrances for arrivals and departures is part of a larger scheme within our airport to provide the quickest and most efficient arrival and departure circulation routes to avoid spontaneous overcrowding.

Public accessibility also meant integration with existing means of transportation, both for the convenience of passenger and community. Serving as an intermodal hub, where all modes of public and private transportation meet, instantly increases the airport's status to the cities major meeting spot. We designed our intermodal terminal again to avoid overcrowding. The intermodal terminal is designed to make each different mode of transport close and clearly visible, plane shuttles to the north and south, taxis to the west, bus service underground, and the mall to the east. Passengers can quickly find where they need to go, and avoid back-ups and crowds caused by indirection.



The method of security through public use has been proven in cases such as Berlin Tempelhof. Tempelhof integrates directly with the city's subway system, provides quick and convenient parking, and is pedestrian friendly with its front façade serving as a part of a larger bicycling network. This airport sets the standard for airport-city integration, and is continually proven to be one of the safest airports in the world thanks to this integration. (Bowdler)

### **Safety in Built Form**

The built form of an airport is equally important in creating a safe and secure environment. But building safe doesn't mean building bulky. In fact it's the placement of programming relative to one another that can improve security ten-fold. Structure needs to be isolated from non-secure areas, distinct circulation routes are needed to separate security personnel, arrivals, departures, and public use, spaces need to be easy to isolate and control. The majority of this can be accomplished through an architectural hierarchy of secure and non-secure areas. Secure and non-secure areas are defined as areas that have had passenger screening, all arriving and departing passengers are considered insecure.

Compartmentalization is important in creating distinct nodes within an airport that can be shut off and isolated in times of crisis. Examples of isolation included people, air handling systems, structure, fire, and telecommunications systems. Foster's Standsted is an excellent example of isolation of services, in which all services are handled inside service 'trees'. Services can be contained to specific areas within the airport, with little co-dependence on one another.

We choose a similar route with our own airport using the evacuation stairs to contain major structure and services. The placement of the structural stairs also serve as visual

landmarks, difficult to access without being inside the secured area of the airport, and more difficult to sabotage without being noticed. The airport itself is designed to be isolated in a series of horizontal and vertical planes. The tarmac level being considered most secure, working up the least secure mall space on the third floor. The least secure areas were kept tall to prevent bombings on the most vital ground floor structure. Bombings on these levels is also least likely to affect vital airport functions. A third step was to build the airport in a series of smaller terminals, which can easily be shut off from one another in times of crisis. These terminals allow for community based programming to happen in between them acting as a secure insulation, while also serving as a template for airport expansion.



The circulation within the building is orchestrated in order to provide adequate public use, while also providing the most efficient and quick routes for travelers in and out of the airport. Each terminal divided by arrivals and departures with a more intimate area dividing them. The more intimate area is formed by a second story security lookout. The separation of uses allows for quick passenger pick up and drop-off at designated waiting areas.



## **Conclusion**

While developments in technology continue to help fight security threats in airports, real solutions lie in the simple and clear planning of the airport. The safest cities and airports are among those that are highly used, New York, Toronto, and Chicago. While targets for terrorism, in terms of the actual cities, they've largely ridded themselves of crime through improved neighborhoods with communities that care and prevent crime. Airports can no longer be viewed as islands away from cities, but should be embraced as city-building elements. Amongst the largest growth areas in cities are those which surround airports, the land surrounding Pearson international airport has experienced the largest growth in the GTA. It's sound and land use that is the determining factor of the removal of airports from cities, what fails to be recognized is that these issues can be controlled effectively. Airports like Berlin Tempelhof mitigate these issues by forming a border-condition to the city, allowing the terminal itself to meet the city while simultaneously acting as a sound barrier. Until airports become urban, airport security will remain dependent on high technology, and increased personnel use. These factors are not only expensive, but continue to ostracize the general public. The question remains how to convince a suburban society to embrace urbanism.

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