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Meanings of a territorial infrastructure: the airports

Significati di una infrastruttura territoriale: gli aeroporti

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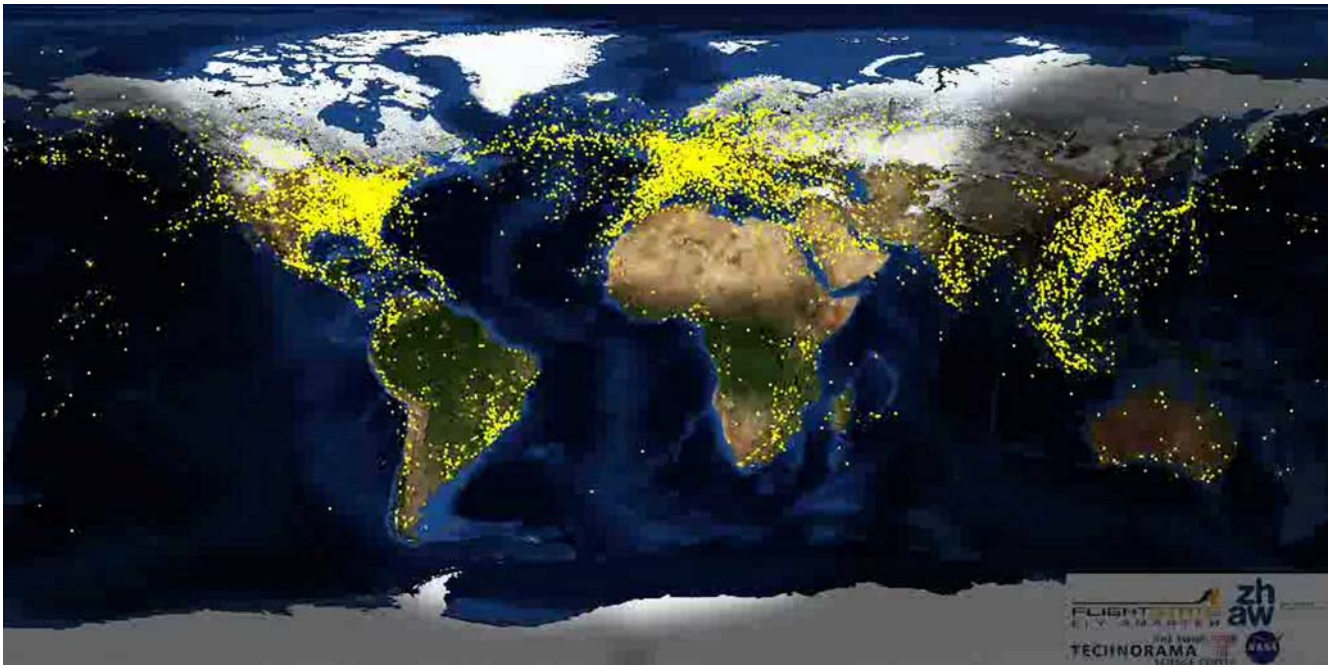
The paper want to explore the major meanings of an airport. It is a territorial infrastructure that increases the spatial accessibility and the economic potential of a territory; in this sense, it is also a port to boost tourism and cultural exchanges. It is also an infrastructure bringing with it investment in other areas of mobility. Since the sixties, finally, it has also become an architectural icon and a symbol of urban level. Objective limitations remain; in particular for the position, outside the city, and for the service, that can be ordered and tidy.
The airports have an important role for the move of people. As the international transport statistics the number of passengers in the main airports is growing, also if has suffered the blows of the international economic crisis.
The expansion of air passenger traffic is related with the tendency to the specialization of travels, according to the range of movement of persons. The actual changing economic world coincides with a process of continuous growth of passenger flows, partly independent from that of economic growth; the combination of these two processes has multiplied the number of connections and has produced new phenomena.
The transport system isn't a neutral system, also if it is sectorial; it, rather, is linked very strongly with the territorial system in which it operates and with the location's choices of firms and individuals.
This reflection has value for all the transport's infrastructures, although with different degrees. In this ranking the airports are located in a great importance position, as they can be a strategic asset in the territorial economic growth processes, contributing directly or indirectly to the development of local enterprises.
An airport operates whether as a supplier of infrastructure or as a business reality in itself, operating in a highly competitive market with an high speed of change.
Airports are an architectural and urban typology typically lacking of physical and spatial integration with their urban context; for this the airports have evolved into semi-autonomous spaces. For their dimensional characteristics and for the incidence of pollutants factors, must be placed outside the city, often at significant distances from the same: their fundamental role in the urban structure is expressed, therefore, in external spaces from the city.
As defined above, the airport is an urban infrastructure. But it is other things also: it is an ordered place, because its management requires defined actions and sequences of activities that are the true opposite of the urban disorder. Both the structures are complexes but the airport is a side where the hierarchical roles are well defined, more than in other sides, and it is the side where the authority is recognized and well accepted.
The building of new airports, or the modernization of existing structures are a sign of the sectors' vitality and of the necessity to offer better services to an expanding custom. But the airports have created a lot of imagines around their presence and use.

The several roles of an infrastructure

The urban economy defines the role of cities in terms of its ability to generate income and wealth.
The generation of income, as stated in some urban models developed in that research's area, e.g. in the Economic Base Theory (Lowry 1964), comes from the presence of activities generating goods sold out the city (core activities) and activities generating goods sold within the city itself (service activities).
The significance of the productive factor, namely the presence of core activities, generates the trades of the city with thr external areas, requiring the creation of communication's infrastructures in the medium and long range. It is precisely this factor which necessitates the presence of international and intercontinental airport facilities.
The United States that, after the Second World War, was the hub of the world economic development, for first have developed a system of large airports. Then it was the turn of Europe, while today is the shift of the Asian countries, worldwide center of production facilities.
These shifts are the prosecution of a continuous evolution started during the industrial revolution. As Toynbee (1970, 18): «In our own time, two of the many technological revolutions that we have witnessed have been the increase in the productivity of agriculture and animal husbandry and the increase in the efficiency of means of transportation. Both these technological revolutions started during the later decades of the eighteenth century, and, since then, they have gathered speed till, after the Second World War, they worked up to their present impetus.
Throughout the span of seven or eight millennia that elapsed between the building of the first city at Jericho and the outbreak of the Industrial Revolution in Britain, the productivity of agriculture was low and the means of



A day of air traffic worldwide. The image is extracted from a movie posted on Youtube (see the source at the end of the paper) showing the schedule changings in a generic daily traffic .

communication were poor in term of present-day standards, and consequently, by the same standards, the population of cities were small».

The changing economic world that we have summarized, coincides with a process of continuous growth of passenger flows, partly independent from that of economic growth; the combination of these two processes has multiplied the number of connections and has produced new phenomena such as the low-cost flights.

In this framework, the emphasis of the airport as architecture work is to consider a secondary factor. Right the building's structure and the shape of the shells have played much of the architectural significance of the new airports, in part forced by the need to cover large areas where well-defined activities, multiplied in number with the explosion of traffic, take place.

Much less interesting is the analysis of the building's functions, because the efficiency of ground services and their locations derives from a well defined space's organization and not by the adopted architectural solutions.

A separate mention deserves the local territorial impact of airport facilities. Over the years we have witnessed a constant adjustment of ground infrastructures and of the connections with the city and the neighboring territories, with the construction of fast road networks and various types of rail links; but we have witnessed also to another phenomenon reasumable in the strong transformations of the spaces surrounding the airports, favored area for the settlement of productive and service activities with high employment impact.

The transport system is not a neutral system, also if it is sectorial; moreover, it is linked very strongly with the territorial system in which it operates and with the location choices of firms and individuals.

This reflection is real for all transport infrastructures, although with different degrees. In this list the airports are located in a position with a great importance, as they can be a strategic asset in the territorial economic growth processes, contributing directly or indirectly to the develo-pment of local enterprises.

An airport operates whether as a supplier of infrastructure or as a business reality in itself, working in a highly competitive market characterized by an high speed of change.

In the current economic scenarios the feasibility of fast and reliable travels, guaranteed by the presence of airport facilities, is a crucial key of competitiveness. It follows that there is a strong interdependence between the airport and its territory, in relation to regional economic growth, increase of competitiveness, and creation of attractiveness.

The economic impacts of the civil aviation are remarkable. The types of economic impact are: primary impacts (direct and indirect) and induced or secondary impacts (FAA 2009), also if some of these impacts cannot be measured qualitatively.

The primary impacts of aviation include air transportation and supporting services; aircraft, aircraft engines and parts manifacturing; and travel and other trip-related expenditures by travelers using air transportation. The direct impacts are created through manifacturing and air transportation

Nr	Airport	Total	% Chg
1	ATLANTA GA, US (ATL)	89.497.347	2.2
2	BEIJING, CN (PEK)	74.849.249	13.1
3	CHICAGO IL, US (ORD)	66.528.691	2.7
4	LONDON, GB (LHR)	66.101.510	(0.2)
5	TOKYO, JP (HND)	64.511.475	3.9
6	LOS ANGELES CA, US (LAX)	59.162.148	3.7
7	PARIS, FR (CDG)	58.506.082	1.0
8	DALLAS/FORT WORTH TX, US (DFW)	57.008.407	1.8
9	FRANKFURT, DE (FRA)	53.468.915	4.8
10	DENVER CO, US (DEN)	52.310.145	3.7
11	HONG KONG, HK (HKG)	50.867.241	10.4
12	MADRID, ES (MAD)	49.902.011	2.1
13	DUBAI, AE (DXB)	47.764.900	13.4
14	NEW YORK NY, US (JFK)	46.642.833	2.0
15	AMSTERDAM, NL (AMS)	45.718.899	4.5
16	JAKARTA, ID (CGK)	44 913 287	17.2
17	BANGKOK, TH (BKK)	43.229.242	2.2
18	SINGAPORE, SG (SIN)	42.723.394	12.2
19	GUANGZHOU, CN (CAN)	41.541.601	10.4
20	SHANGHAI, CN (PVG)	41.257.657	25.5
21	HOUSTON TX, US (IAH)	40.387.619	0.6
22	LAS VEGAS NV, US (LAS)	39.614.518	(1.6)
23	SAN FRANCISCO CA, US (SFO)	39.447.524	4.8
24	PHOENIX AZ, US (PHX)	38.813.450	2.2
25	CHARLOTTE NC, US (CLT)	38.630.843	11.6
26	ROME, IT (FCO)	36.437.430	6.7
27	SYDNEY, AU (SYD)	36.123.811	6.5
28	MIAMI FL, US (MIA)	36.079.582	6.1
29	MUNICH, DE (MUC)	35.477.186	8.8
30	ORLANDO FL, US (MCO)	35.092.281	4.1

Passenger traffic for past 12 months-12 months ending February 2011. Last update: May 13 2011. Passenger traffic: total passengers enplaned and deplaned, passengers in transit counted once. Airports participating in the ACI Monthly Traffic Statistics Collection. Results are preliminary.

activities as measured by the employment, payroll and sales/output; the indirect impacts result from the expenditures of air passengers other than airfares and associated charges paid directly to airlines or travel arrangers. Visitor expenditures interest industries as traveler accommodations (hotels, motels, etc.), food and beverage providers (restaurants, bars, fast-food outlets and stores), arts, entertainment, recreation (museums, theatres and amusement parks), visitor travel services (sightseeing, other tourist services and travel agencies), ground transportation (to and from airports), and other on-and-off airport purchases of goods and services (souvenirs).

Induced impacts result from expenditures made by industries are identified in the measurement of primary impacts to supporting businesses and entities, as well as the spending of direct and indirect employees. These impacts capture the secondary impacts on the economy as direct/indirect sales, and payroll impacts.

Secondary effects are very important for the growth of the territory. The area around the airport has an advantage by the so called “reputation effect”, for which greater is the international reputation of an airport, the more it acts as a magnet for economic activities, often advanced in terms of research and applied technologies. The effect seems to work also in the other direction; so the presence of important companies increases the reputation and image of the airport. “Follow my leader” is a side effect, and it testifies the creation of cluster’s companies in the same field of the first, following the first positively established.

Another effect of territorial order is the stimulus that an airport produces on the tourism sector. A rapid accessibility is crucial for the creation of advanced tourist services and for the inclusion of the area in national and international circuits, especially if the airport is connected to the territory by means of a modern road and rail network.

Some airports have produced urban sprawl around them. Around the airports of Paris, Amsterdam or Frankfurt are present urban developments similar to those affected railway stations at the end of the nineteenth century. The most interesting case is Schiphol Airport in Amsterdam. In the White Paper of 1993[1] the Dutch government decided to transform the airport from a simple place of arrival and departure in an integrated center for services and activities. The results are relevant to the extent that around the airport is present the highest concentration of logistical and administrative centers of the entire Netherlands. The success of the plan was promoted also by the growing of the land’s infrastructures, with a relevant impact on the accessibility of the area and with a great attention to the environmental aspects.

Airport and city

Airports are an architectural structure and an urban function lacking of physical and spatial integration with their urban context; for this the airports have evolved into semi-autonomous spaces. They can be considered as the product of political and economic conflicts between local and global factors, generating physical and spatial barriers, consequently denying the airport’s role as a civic and public space.

Airports are urban infrastructures that, for their dimensional characteristics and for the incidence of pollutants factors, must be placed outside the city, often at significant

Spatial transformation around an infrastructure in growing. The case of the airports of Madrid Barajas (2002-2007) and of Beijing Capital (2003-2011). The images came from Google Earths ans show the deep changings around.

distances from the same: in this is possible to delineate the conflict between their fundamental role in the urban structure and the hard impacts that they create on the surrounding territory.

Physically, the airport is antithetical to the city: the vast expanses of land required, the exhaustive pollution and the deafening noise of air traffic have all pushed the airport to a city's edge, and often far beyond its boundaries.

This is a key and unique feature. Normally, in fact, the urban infrastructures are characterized by the close relationships with the users and by the continuous exchange among physical, functional and human factors.

This feature allows to say that interesting qualitative elements could emerge if you take into account some correlations between airport and the surrounding area: in particular, there may be a close correlation between the importance of the airport and the relevance of the city (also if an infrastructure outside to the city center is less influenced by the urban characteristics), but other characteristics could become more important, such as the strength of the surrounding territory, its economic specialization, or the functional characteristics of the air traffic taking place in the airport (regional, national, international).

As quoted in a previous paper (Mazzeo 2010) the number of passengers transiting through an airport is one of the most important pointer of the international role of a city, with a strong correlation between distribution of the urban centrality and distribution of the passenger's traffic.

It is also intersting to undeline that the levels of interdependence among the airport and the city have greatly fluctuated over the past century. In the past, a city's size frequently dictated the importance of its airport, and the growth of an airport was often tied to its host's growth.

We can say, in theory, that the relevance of an airport does not follow from the importance of the urban center and that the performance of the two indicators may not be consistent.

Moving from theory to reality we have seen that the importance of the city has a close correlation with the size of airport's flows and that the airport's capacity to handle flows to and from the city and the region is closely connected with the strength of the territory and with the vitality of cities in economic and cultural fields. To these factors, finally, are to add the efficiency of the service in relation to the reception and to the rapidity of performance of the specific activities that take place there.

The new entrance area of the Terminal 3 of Beijing Capital Airport. Designed by Foster and Partners' is the most large building dedicated to this function. It was opened for the 2010 Olympic Games.

The growing of the air traffic

The airports have an important role for the move of people. As the international transport statistics the number of passengers in the main airports is growing, also if has suffered the blows of the international economic crisis. The number of passenger traffic for each airport indicates the dimension of the complexity of a modern airport.

The expansion of air passenger traffic is a fact related with the tendency to the specialization of travels, according to the range of movement of persons.

Until the Second World War, the long-haul traffic was going by rail (land traffic) and by ship (sea traffic).

Today the situation is changed and the train only makes sense for short or medium distances, if carried out with high-speed connections. The ship has become an "obsolete" means for the passenger traffic, except for short or medium distances, for trips requiring transportation of cars, or for leisure travel.

«Aviation is an amazing business. The past decade illustrates the point. Airlines have survived an incredible rollercoaster ride of crises and shocks. And the industry emerged transformed» (Bisignani 2011). It derives that, compared with 2001, freight shipments expanded by 17 million tonnes to more than 46 million. And nearly 2.6 billion travelers are expected for 2011, an increase of 900 million. With the industry's commitment to safety the reduction of the accident rate is 42% compared with 2001. On the other hand there is the financial situation; airline revenues nearly doubled from $307 billion in 2001 to an expected $594 billion for 2011. But even in the best year of the decade (2010) profitability was only $18 billion, equal to a low net margin of 3.2%, far less than the 7-8% needed to cover the cost of capital.

«Many factors contribute to aviation's chronic destruction of capital. The first is that the value chain does not work effectively. Aviation exists because people want to fly. If they did not, there would be no need to build planes, develop reservation systems, build airports, or prepare airline catering. Airlines do the flying. And the whole chain lives off the value that airlines create» (Bisignani 2011).

According to the latest figures released by IATA (May 2011) traffic results showed a 6.8% increase in passenger traffic over May 2010. This is 4% higher than the beginning of the year. Freight traffic showed a drop of 4% against the post-recession peak of the re-stocking cycle in May 2010. However, recent months show a renewed upward trend with freight volumes 2% higher than the start of the year.

The data are positive but there are risks associated with political unrest in the Middle East and the European currency crisis.
The international passenger market by region shows a series of differences.

– The international traffic of African airlines increased 1.1% over the previous year, while Asia-Pacific carriers recorded an expansion of 4.7%, below the global average of 8.0%.
– European carriers' traffic expanded by 10.9%, boosted by increased northern European economic activity and a weaker Euro encouraging trade and inbound travel.
– Latin American carriers saw the fastest international growth, up 21.3% compared to May 2010. This is a consequence of strong economic growth and increased travel and trade flows to North America and across the Pacific.
– Middle East carriers grew international traffic by 7.8% over May 2010. While political unrest continues to have a dramatic impact on several of the region's smaller markets, the overall impact on the region's carriers is very limited.
– North American carriers, finally, have cut capacity for two consecutive months (-0.4% in April and -0.5% in May). Year-on-year, traffic is up 4.5%.
– Also the domestic passenger market in some countries shows very different behaviors: for example, Japanese domestic demand was 29.9% below May 2010 while Brazil remains volatile but demand is up 21.6%. In China, demand was 10.4% higher than the previous May, while in India domestic demand was 13.8% above previous-year. The mature United States domestic demand grew by 4.0% compared to the same month of the last year.

The Airport of Munich in Germany is considered one of the must useful and efficient in the world. It is at the top in the international list.

The data confirm the presence of two areas of main growing in the air transport: Asia and South America, the same in which there is the more wide economic growing.
With the massive expansion of Asian markets over the past few decades, air travel in the region has been steadily gaining ground. This growth has led to the construction of numerous new and expanded international airports over the past years, to the point that the most recent wave of airport construction has been concentrated in Asia. Each country, or each city in many cases, has been jockeying for position as the main hub for Asian air transportation.

However, the goal of maximizing passenger numbers nuances the importance of the connection between the city and the airport. Indeed, such a focus raises numerous questions about the design, the urbanity and site specificity of the airport.

The efficiency of the structures

The race to build ever more efficient airports highlights the need to provide the cities of infrastructures characterized by high levels of quality.
The airport has become increasingly a showcase, taking its quality a national order relevance.

Airport of Madrid Barajas. Very bright and elegant in its forms and spaces.It is characterized by the use of the colors of the steel colums. The different shades of the Rainbow drive the traveler in the paths.

An efficient airport is the mirror of a nation and of an efficient city and the proposition of international rankings is the evidence to that.

Just think of the Skytrax rankings, which in recent years has become the most authoritative.

According to this ranking the highest score in terms of quality (5 star airports) is the prerogative of three airports: Hong Kong International, Seoul Incheon, Singapore Changi Airport. At the next lower level (4 star airports) is Amsterdam Schiphol, Beijing Capital Airport, Frankfurt Main Airport, KLIA Kuala Lumpur and Zurich.

With 3 stars follow Abu Dhabi International Airport, Bahrain International Airport, Bangkok Suvarnabhumi Airport, Doha International, Dubai International, Johannesburg International Airport, Kuwait International Airport, London Heathrow Airport, Madrid Barajas Airport and Sydney. On the Internet page www.airlinequality.com/AirportRanking will be pubished le list of the airports with 2 and 1 star[2].

The building of a ranking among the airports is based on the use of a system of indicators grouped in seven categories: 1. the efficiency of the website, 2. the ground mobility; 3. the system of arrivals, departures and transits; 4. the security and the immigration; 5. the services and their comfort in the terminal; 6. the restaurant and the refreshment services; 7. the commercial services.

Each one is supported by a series of indicators[3]; their arrangement, for each airport, can be found on Internet at the address earlier mentioned.

An interesting consideration can be done on one of the aspects of the land services. In consequence of the need to increase the security, passengers spend awaiting flights a rising amount of time in airports airside. Airport operators have capitalised on this captive audience, becoming increasingly sophisticated in their provision of facilities, as suppliers of much more than essential amenities and mini shopping malls.

Airlines also seek to express their competitive advantage through their lounges and adjacent spaces, while retailers and food and beverage providers are producing attractive, often localised spaces for visitors.

The operators are keen to differentiate the quality of their terminals whether it is through pitching at a luxury goods market, with top name brands, or endowing their interior spaces with a unique sense of place (Emberson 2007). The trend is so strong that the revenues from this services is a considerable and growing voice in the balances of the companies that manage airports.

From the territorial point of view the analysis of an airport has to do with factors only partially listed in note 3. For this aspect will be interesting to consider three categories of

The International Airport of Barcelona is a modern structure formed by two terminals. The area before the gates, after the check-in, is formed by a wide shopping area, called “Las Tiendas del Aeropuerto”, in which are present important commercial brands.

indicators, more specifically oriented towards the analysis of spatial factors:

– *location*: proximity to the city centre; urban expression; transport connectivity; airport approach (by air); airport approach (by ground); city approach.
– *architectural expression*: conceptual intention; form; orientation; structure; materiality; integration of technology; local tastes, traditions & building culture.
– *programming*: efficiency of flows; efficiency of service; efficiency of connection (air, ground); airside vs landside treatment; in transit vs arrivals treatment.

The factors of location analyze characteristics associated with the position of the infrastructure within an area, as well as the characteristics of the connections between infras-tructure and the local area, the distance from urban and productive centers, and the speed with which users and goods can reach the airport; these factors plays a key role that can be stressed or challenged with the efficiency of the connections.

The architectural factors are more difficult to define because their characteristics have to do with the sphere of the perception of space, as well as the organization and function of the same. Nevertheless, the relevance of these factors is beyond doubt; considering the fact that the construction of the space has great influence on the efficiency of the service, as well as the psychology in the use of space, especially in a particular case such as that which takes place in an airport.

The third type of factors are organizational and have to do with the accuracy and efficiency of the performed service. They assume a great significance because the positive assessment of their performance is reflected in the overall assessment of the airport.

The interrelationship among the three factor’s systems is an undisputed base for the success of an infrastructure, even if the traffic dimension which is attributable to an airport is primarily a result of other considerations, such as national political choices, and decisions concerning the location of airlines.

Airports as urban signs

The terminal design, with the processes and decisions on the suitability of design concepts for a particular airport and/or air transport demand, remains not well defined. The

Road and train connections between the Airport of Munich and the city.

terminal design concept is central to the planning and design phases of airport development and will influence the following airport airside and landside operations.

Studying the relationships between characteristics of demand and terminal design concepts is of great importance to understand the potential influence of both on airport operations.

As defined above, the airport is an urban infrastructure. But it is also other things. It is an ordered place, because its management requires defined actions and activity's sequences that are the true opposite of the urban disorder. Both the structures are complexes but the airport is a side where the hierarchical roles are precisely defined, more than in other sides, and it is the side where the authority is recognized and well accepted (Aaltola 2005).

The airport is a "gate", a door through which the passenger changes the perception of space, because it is used for jumps and not for continuity. This perception swithes from continuity to discontinuity in space and time, because it is possible to cross significant distances in short time without using the usual parameters of movement, typical of the mankind.

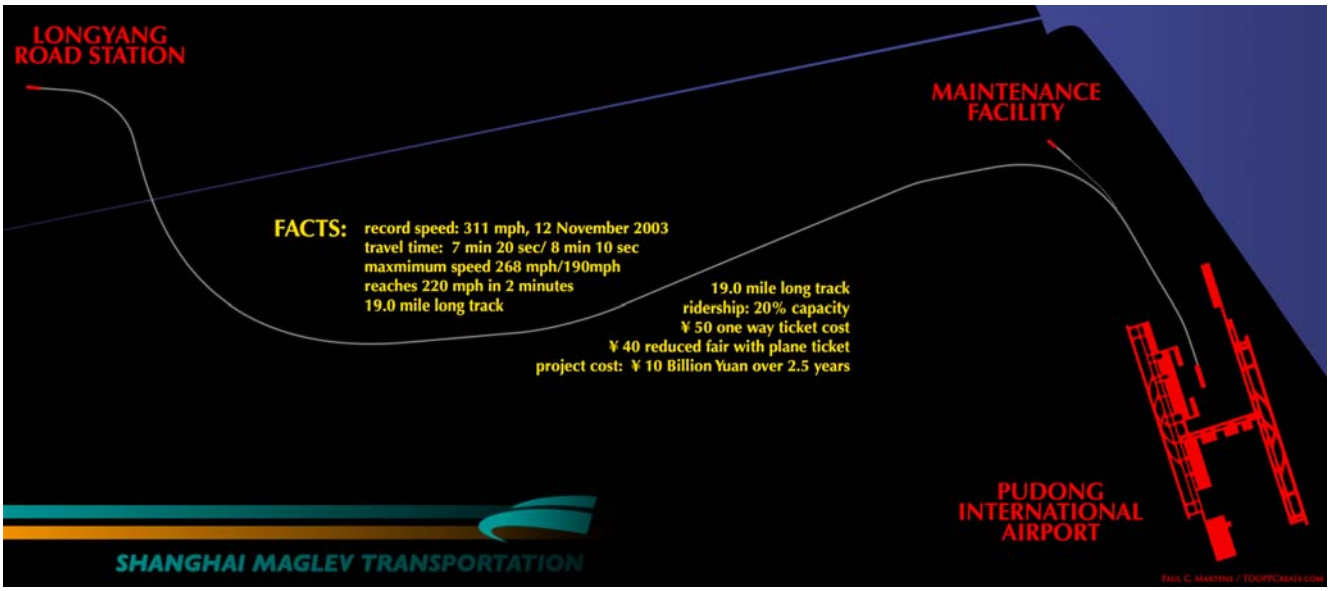
The airport terminal is one of the most important building's type in the world of transportation. It is also the place of some of the most ambitious and innovative achievements in 20th-century architecture. The modern glass-and-steel structures are very far from the timber runway used during the Wright Brothers' first powered flight. In one century the airport's architecture is rapidly evolved meeting the demands of a growing travel industry.

The airplane is used today for the medium and long distance movement. The expansion in the use of airplanes has required a qualification of the ground infrastructures bringing the airports to a high level of sophistication and to a strong experimentation of spaces and architectures. The speed of change has become very rapid and, within 30 years, has been yielded obsolete facilities that were at the forefront in the Sixties and Seventies. Just remember the ordeal that is going through the Terminal 5 of the John F. Kennedy Airport of New York, designed by Saarinen, no longer sufficient for the traffic volume and subjected to operations of enlargement and transformation that have stirred much debate in relation to the building's architectural alteration. «There have been some very beautiful air terminals built in the jet age, and none more exquisite than Eero Saarinen's TWA terminal, opened in 1962, at what is now John F. Kennedy international airport.

Here is a folding, and enfolding, of concrete wings sheltering some of the most voluptuous and compelling spaces ever seen in an airport. But, all too soon, Saarinen's terminal was too small, and unsuitable for mass air travel: today's international terminals need to be vast processing machines, coping with improbable numbers of people wanting to zap around the world as quickly and cheaply as possible» (Glancey 2009).

It is to underline that in this modernization process, the railway stations (in part) and the passenger ports appear in late respect to airports.

Eero Saarinen's TWA Terminal in New York, Renzo Piano's Kansai International Airport in Osaka, and Norman Foster's Chek Lap Kok Airport in Hong Kong are examples of a spectacular design involving the airport terminal.



The Pudong International Airport of Shanghai is connected with the city whit a metro line and with 40 km of high speed rail on which run the Maglev, a levitation train developped in Germany, that connect the airport with Longyang Road. Station. There aren't other rail lines made by this technology.

In the last years a series of new airport infrastructure were put into operation. Main characters of these infrastructures are the size, the architectural layout, the attention to the quality of the services, and the fast connection to the city. The opening in 2009 of the Terminal 2 of Heathrow, designed by Norman Foster, was hailed with great words. The world's best airport architecture: «a sequence of crisp, elegant, uncluttered spaces set under a single swooping, aerofoil-like roof, awash with daylight from 10-metre-high north-facing windows, as free as technically possible from the murky glow of artificial lighting. Handsome, thoughtful, and making the most of leading-edge technologies, it all adds up to an airport terminal that will easily rank among the world's best» (Glancey 2009).

Terminal 2 strikes the balance between practical function and beautiful design. In the age of cheap, mass air travel, it is one of the most ambitious and innovative examples of airport architecture yet, also if the work will be complete within 2019. Terminals 3 and 4 will have been upgraded, Richard Rogers will have been extended Terminal 5 with a satellite building, and there is the idea of a third runway.

Other great airports projected by Foster and Rogers are Hong Kong's Chek Lap Kok airport and the new terminal at Beijing airport. The first, opened in 1998, is one of the most functional airport and it is cited as the long-distance travellers' favourite place to change planes. The second, opened for the Olympic Games of 2008, is one of world's largest single building: its lengthy is 2.9 km and it is one of the symbol of China's rise as a global superpower.

The purpose of an airport is to serve the residents of the city in which it is located and the passengers connecting through the airport. «The world's architects and planners are increasingly treating the airport not as separate entity but as just another part of the urban condition. (...) The task now is to design effectively for the whole physical, environmental and emotional experience of the airport over a wide area» (Pearman 2008, 236).

«Generally, most of the best new airports are like giant hangars housed under aerofoil roofs. This makes sense for both practical and aesthetic purposes: aircrafts and hangars go together like ships and docks, or cars and garages. Meanwhile, these big spaces offer to the architects the maximum opportunity to design for an endless stream of passengers, while the roofs are configured for modulating flows of daylight into vast interiors – too many older airport buildings remain horribly claustrophobic» (Glancey 2009).

The building of new airports, or the modernization of existing structures are a sign of the sectors' vitality and of the necessity to offer better services to an expanding custom. But the airports have created a lot of imagines around their presence and use.

For example, the transport hub can be considered a "non-place", according with Augé (1999); the urbanization of the world is accompanied by changes that are in accordance with the organization of streams, the migration, the comparison among cultures and spending power, and, more generally, are connected to the expansion of the consumption (Augé 2007). In this sense, airports, shopping centers and highways, can be considered as "non-places". For Augé their vocation is not to create identities, relationships or heritages, but rather to facilitate the communications and the resulting trade.

The emblematic roles for transport architecture – particularly airports and railway stations – as gateways, flagships and

The external area of the Shanghai Airport with the covered six lane road for the car and bus arrival and departure of the passengers.

symbols, and their consequent use in place marketing activities, are relevant (Warnaby 2009).
Their consideration as flagships o symbols derive from the relevance of the architectural signs that they use and from the perception of the changing in the international economy, with the emergence of the new economic powers and the suffering of the older. The move of the money testifies the sides where they are transformed in investments necessary for to sustain the growing.

Connections with the city

A factor of great importance in the overall efficiency of an airport is given by the mobility sistems that connect the infrastructure with the surrounding territory and, in particular, with the city which it serves.
The connections with the city occur through motorway networks and rail networks. The latter takes place in different ways ranging from dedicated subway lines (Madrid, Athens, ...), conventional railway lines (Rome), dedicated but innovative rail lines (the levitation train of Shanghai). Aim of the land investments is to connect the airport and the city as soon as possible.
The Pudong International Airport of Shanghai is connected with the city with two railway lines: the first is Transrapid, the first commercial high-speed Maglev railway in the world, that connect the airport to Longyang Road Metro station. The track length is of 30 km, and the peak speed is of 431 km/h. The line was inaugurated in 2002. A transportation cen-ter will be built and will become operational in 2015.
The second line is the Shanghai Metro Line 2, connecting the Airport with the centre of the city. Also the Shanghai Hongqiao Airport is linked by subway.
Seoul Incheon is connected with the city of Seoul with a railway, named AREX, having terminal in the Seoul Station. Along the line there are the connections with six metropolitan lines and other national and regional lines. Express courses connect the airport with the central station without stops.
The Incheon International expressway is used exclusively by traffic to and from Incheon International Airport that enables passengers to arrive on time. In other words, once you are on the Incheon International Airport Expressway, you can't branch off to Gimpo Airport or Incheon. The Incheon International Airport Expressway has six to eight lanes, and its total length is 40.2 km (Banghwa Bridge - Incheon Airport). There are 5 ramps onto the Incheon International Airport Expressway. The International Airport of Madrid-Barajas is not reached by the network of Spanish Railways (RENFE). However, long-distance stations, AVE and Suburban are accessible within minutes by subway. The airport is connected with the capital with the Metro Line 8, starting from the station of Nuevo Ministerios. From this

station is possible to use other metro lines for arriving in the Atocha RENFE-AVE Station or in other parts of the city.
The International Airport of Rome Fiumicino is connected with the city by a rail line with the head in the station of Roma Termini, the main of the Italian capital. From Roma Termini is possible to use the national rail network or the local metropolitan network.

Note

1 The Dutch Parliament in 1995 ratified its Government White Paper on the 'Future of Schiphol'. The White Paper allowed the construction of Schiphol's fifth runway with the condition that the noise level in the airport environs does not increase. Construction of the fifth runway at Amsterdam Airport Schiphol started in September 2000. Called Polderbaan, the runway was designed to provide for the expected growth of air transport movements. The new runway was also intended to eliminate noise disturbance in the airport environs. It became operational at the end of February 2003; the opening of the new runway coincided with the revised Aviation Act (effective from January 2003), which incorporated new environmental and safety standards.

2 World Airport Star Ranking is reviewed annually, with detailed Quality analysis of standards by SKYTRAX. Ranking does not have any association with trip reports / traveller assessments in consumer review areas of our web site.

3 The whole list of indicators includes. 1 WEBSITE: Ease of use; Language options; Flight information; Site design and layout; Parking/transportation information; Transit/local hotel details; Terminal guide/plans. 2. GROUND TRANSPORT: Selection of public transport facilities; Location of public transport facilities; Frequency of express link(s) downtown; Cost of express link(s) downtown; Location/queuing/availability of taxis; Location/access to car rental facilities; Access by car/car parking facilities; Short term car park facilities; Long term car park facilities; Location of hotel shuttle buses; Frequency of hotel shuttle buses. 3. ARRIVAL–TRANSIT–DEPARTURE: Walking distances-arrival/transit; Walking distances–departure; time/distance to boarding gates; Availability of baggage carts: airside; Ease of transfer: int'l to int'l; Ease of transfer: int'l to domestic; Ease of locating transfer counters; Ease of locating airline lounges; Transfer between terminal areas; Ease of locating check-in counters; Waiting times at check-in; Availability of baggage carts: landside; crowds/queuing in check-in areas; Seating/facilities near check-in; Facilities in meet & greet areas; Directional signage around airport. 4. SECURITY & IMMIGRATION: Waiting times for security screening; Efficiency of security screening; Staff attitude at security screening; Security staff language skills; Fast track security screening; Customs clearance procedures; Immigration queues: arrival; Immigration queues: departure; Fast track immigration channel; Staff attitude at immigration; Immigration staff language skills; Customs staff attitude. 5. TERMINAL COMFORT – FACILITIES: Seating areas - comfort & capacity; Passenger crowding around terminal; Natural daylight in terminal; Terminal ambience & décor; Views of aircraft /runways; Cleanliness of terminal areas; Standard of air conditioning; Washrooms-numbers/location; Washrooms–cleanliness; Showers-availability/cleanliness; Transit hotel / dayroom facilities; Baby changing facilities; Children's play facilities; Other leisure facilities; Flight information screens; Airport PA information; Disabled facilities/ease of access; Quiet/rest areas; Smoking policy / smoking rooms; Customer service counters; ATM / cash machines; Bureau de change; WiFi facilities; Public access internet facilities; Public telephones; Business centre; Boarding gates: facilities/toilets; Boarding gates: seating areas. 6. FOOD & BEVERAGE: Selection of restaurants/food outlets; Service in restaurants/ food outlets; Opening hours of bars / food outlets; Prices of food and beverages; Coffee shop/snack counters; International food choices; Local/ethnic food choices; Currency acceptance in outlets. 7. SHOPPING FACILITIES: Shopping facilities: landside; Shopping facilities: airside; Staff service in shops; Layout of tax free shopping areas; Variety of tax free shopping outlets; Prices in tax free shops.

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