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# Airport Agency: Globalization and (Peri)urbanism

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## Abstract

Across the world, airports are massive multi-use occupiers of (peri)urban land. At a time of rapid globalized business and tourism travel, hyper-mobility and booming tourism, airports are rapidly reaching their design capacities. Operating restrictions threaten the viability of central city and edge-city airports. Capacity thresholds are also threatened / breached by the emergence of new budget airlines that popularise flying, and by the imminent introduction of the new generation A380 airliner. Extending airports, building new (green- and brown-field) airports, and decentralizing airports compromise the sanctity and ecological sustainability of peri-urban environments. A preliminary review of literature on airports and their siting shows a legacy emphasis on single-site airport studies and research that is increasingly design-related and introspective. Using examples from the fastest growing air traffic markets in Asia and the Middle East, this paper urges a comparative cross-national political-economic and political-ecological study of airports as unstable (peri)urban localities which are outposts in a powerful, globally networked alliance of property developers and transport enterprises.

## Introduction

There are approximately 14,000 designated civil or commercial airports round the world. The number excludes minor and informal airfields and landing strips. All these airports were constructed in the last one hundred years, making them one of the century's distinctive and unique sites. The largest especially have grown in ways that make early maps and photographs unrecognizable. Many continue to evolve relentlessly — air travelers experience many airports as permanent construction sites.

The paper begins with comment on the traffic markets that airports serve, and then outlines the most striking cases of contemporary airport (re)development in Asia and the Middle East where air traffic is growing fastest and where airport provision is most feverish. A penultimate section raises questions about these airport developments.

### **Airport markets**

Airports exist to serve air traffic markets. Global air traffic projections vary, depending on how estimates are made, on the time they are made, and on the length of the forecast. A report in 2005 predicted that world air passenger traffic would grow by over 4% per year till 2020 and that freight traffic would expand by 5.4% annually (*Interavia*, no 681: 2005 17). Based on data collected in early 2005 from 231 member airports which represent 60% of global passenger traffic, Airports Council International estimated that 7.4 billion passengers would travel by air in 2020.

Air traffic growth patterns have not and are not expected to proceed at the same rate in all passenger or freight markets. In Europe, one of the world's largest and most mature air traffic markets, volumes have been multiplying by 4.3% per annum (*Interavia*, no 683: 2006 22). Growth rates are anticipated to be higher in the emergent Asia-Pacific air traffic market. In 2004 IATA estimated that demand for air travel there would grow an average 5.4% each year from 2004 to 2007 (Mathews: 2004). A longer range forecast projected that air traffic growth in Asia would increase at 6.6% annually 2007 to 2027 (*Sunday Telegraph*: 7 January 2007). Within Asia, air traffic is growing fastest and is forecast to grow quickest in India and China. Between 2000 and 2005 domestic air passenger numbers in China rose by 15.5% a year. Chinese airlines are expected to double their passenger loads from 138 million passengers per annum (ppa) in 2004 to 270m ppa in 2010 (MacLeod: 2006).

The effect of air traffic growth on airport capacity can be acute. In Europe, where thirty major airports are already congested, it is likely that double that number will be congested by 2025 at current rates of traffic growth. By 2025 Europe's top 20 airports are expected to be saturated for approximately 8 to 10 hours each day

(*Interavia*, no 683: 2006 22). Servicing China's anticipated boom in air passengers is expected to necessitate doubling the national airline fleet to 1,580 airliners in 2010 (MacLeod: 2006); aircraft handling space in the sky and on the ground will have to expand. Passenger counts at Indian airports are expected to jump 2.5 times from 19m ppa in 2005 to 50m ppa in 2010 (Mathews: 2005).

Soaring levels of air traffic constitute the conventional explanation for airport extension and construction. More properly, it is the mismatch between existing levels of provision and new levels of demand that drive additional airport investment and construction. These gaps are largest in places where previously the demand for air travel was limited. High levels of demand for air travel have existed for decades in Western Europe and North America, and although airport extension and modernisation is occurring there, it is off a high base and is not as rapid, spectacular or plentiful as elsewhere. Developments at Madrid's Barajas may make it Europe's biggest construction project, and construction at Heathrow may be Britain's biggest civil engineering project, but the works are singular and not particularly unusual or iconic. Anxious and watchful local interest can certainly make the projects scrupulous and tortuous. In Britain, consideration of where to site a third London airport dragged on for years, and the investigation for a fifth terminal at Heathrow lasted four years. Things are different in the Middle East and Asia where rapid air traffic growth has triggered many more large and fast airport projects.

There are several reasons for the rapid growth of air traffic. Booming national economic growth explains increases in business traffic and cargo volumes. Rising levels of disposable personal income account for mushrooming leisure and tourism air traffic. Globalisation generally explains the need and ability to carry increasing numbers of people and volumes of materials and products quickly across long distances (Graham and Goetz: 2004). Effective aviation has enabled the just-in-time manufacture that is post-Fordist, low-inventory and multi-site.

Specific events and circumstances have also contributed to air traffic growth. Among these are the political and commercial realignments that have stimulated trade and intercourse. A most pertinent example is China's admission to the World Trade Organi-

sation in 2004. The internationalisation of business, governance, environmentalism, politics and sport also draws agents, delegations, delegates, representatives, and spectators to host countries. The construction of a third terminal at Beijing Capital International Airport is geared to the 2008 Olympics (MacLeod: 2006). The honour of hosting one-off mega-events such as these commands rare political attention, and the intense spotlighting of a country galvanizes action.

The hosting of events that attract smaller visitor numbers can still strain airport resources, but even major international or regional congresses do not generate revenue streams to support major airport projects. Nevertheless, the coincidence of airport improvement and a major event can produce welcome legacy infrastructure.

Together with increased traffic demand, concurrent developments in the aviation industry itself have been spurring air traffic increases and airport development. Since the 1980s in mature markets, and more recently in emerging markets, airlines round the world have rationalised and economized their operations by routeing their flights through a few selected airport hubs. The phenomenon of hubbing (Aaltola: 2005) has turned airports into significant interchanges where many passengers never exit the premises. The design of airport space has had to change accordingly to accommodate the surges of arrivals and departures geared to interlining and single airline scheduling. Furthermore, as airports have become more congested, passenger “dwell time” in airport lounges has stretched, incentivising more diversified and elaborate service provision. Airports have become significant sites of leisure and consumption. Increasingly too, they are work spaces where business travelers spend paid time productively during unavoidable waits or aircraft changes, or even as part of carefully programmed, uninterrupted time in a hectic travel schedule (Breure and van Meel: 2003; Lassen: 2006).

Developments in aircraft technology add to the impetus for airport (re)construction. The most obvious example is the imminent launch into service of the new wide-body Airbus A380. This unusually large aircraft requires ramp and gate redesign at terminals as well as modifications to airfield and runway systems to accommodate its wide main landing gear and its wingspan.

Only a few of the world's airports are anticipating A380 service soon; far more airport extension is being undertaken to accommodate the rising number of medium-size commercial aircraft, some of them in service with the many low-cost airlines that have emerged in Asia and the Middle East in the last decade. The rapid growth of budget airlines has created the opportunity and need to segregate slow traffic from fast turn-round, no-frills traffic. Asia's first dedicated Budget Terminal opened at Singapore's Changi airport in March 2006. Built to minimise costs in a fast turnover business, the terminal is a relatively small, single-storey building designed without jetways, lounges, escalators, elevators or gateway seating.

Another force that has been driving change in the airport landscape is privatization of ownership and operation. Many minor landing grounds have always been in private or local hands, but privatisation of large international airports has been a relatively recent event even in mature airport markets (Graham: 2003). The switch out of local or national state funding, ownership and operation is even more recent in the Middle East and Asia. In China it was only in 2004 that local governments could take control of an airport. The switch was not gradual: 90 of the country's airports were handed over simultaneously.

The scale, expense and skill of modern airport investment, maintenance and management are such that many governments are no longer willing or able to assume the full risk or cost, and prefer partnerships with the private sector or outright sale. Run as businesses rather than public utilities, airports have become entities that stakeholders regard as devices for generating profit, and as operations whose sunken costs and market share must be defended. Legislative change has enabled airports to borrow on financial markets and to recapitalize at a speed and in volumes previously denied them. Many airports are listed businesses on stock exchanges (Graham: 2003).

Closely associated with privatisation, but not exclusively so, the position of airports on the world airline map is another consideration behind current airport expansion and construction. The national pride that previously drove airport construction has been succeeded by a quest for profits in which airports seek to become

preferred airline hubs and regional gateways. The race to capture and retain traffic share is because airports are natural monopolies that enjoy protection from the high barrier costs to entry, chiefly the high costs of land and facilities. The difficulty and expense airlines face in relocating the core of their operations reinforces this natural monopoly (Domney *et al.*: 2005).

In Asia, there is stiff competition between airport interests in Singapore (32m ppa in 2005), Bangkok (39m ppa in 2005) and Hong Kong (40m ppa in 2005) for regional domination. In the Middle East, airports compete as pivots in a re-enactment of the region's historic role of crossroads between east and west. In south India, Bangalore and Hyderabad are competing to be the regional hub. At the heart of India's Silicon Valley, Bangalore's army of computer software firms, developers and technicians have boosted its profile on the world stage as a key place to transact business; a smart and efficient airport is a necessary accompaniment (Mathews: 2005). Incheon International Airport is within a 3.5 hour flight of 2bn people (one third of the world's population), creating the perfect hub in Northeast Asia (Ilbo: 2004). Promotional material for Hong Kong international airport stresses its centrality in the Asian-Pacific market by showing its high degree of connectivity to places five hours flying time away, and by emphasising its location at the mouth of the Pearl River ([www.hongkongairport.com](http://www.hongkongairport.com). 4 October 2006)

### **Airport development**

Asia and the Middle East are embarked on an unprecedented programme of airport development. Statistics about airport development in different countries or regions are seldom strictly comparable, but even so, the data are staggering. One business source reported US\$ 40bn of airport development and expansion across the Middle East, North Africa and the Indian subcontinent in mid-2006. The outcome will be 54 new terminal buildings, 10 new airport hotels and 12 new cargo complexes (*Business Times Singapore*: 14 June 2006). In October 2006 an airport research group reported that the ten leading Middle East airports were investing US\$ 23.5bn in new airport capacity by 2012 that will provide capacity for 318m ppa, up 292% on current levels. The extra capacity takes total airport capacity in the region to 400m ppa (*Centre for Asia Pacific Aviation*: [www.centreforaviation.com](http://www.centreforaviation.com). 4 October 2006).

Most increase in airport capacity is achieved by renovation, rehabilitation and extension, but in the developing air traffic markets there is unusual emphasis on new airport construction. Actual and anticipated air traffic increases have led to renovation and extension intended to boost capacity and efficiency, and to reduce congestion and delays. Typical land-side projects include provision of better access roads and additional parking, and enhanced public transport. On the air side of terminals improvements are typically sought in lighting, airfield pavement, taxiways, aircraft stands, passenger handling, aircraft fuel delivery networks, and storm-water drainage. Runway lengthening and laying out of additional runways on newly acquired land provides an increased number of landing and take-off slots, and is an insurance against runway closure due to bird strikes, accidents and runway damage.

### *Asia*

Precursors to the “take-off” of Asian airport development occurred in the 1980s and 1980s when Asia’s tiger economies first boomed. Significant airport development at the time occurred at Singapore (Changi), Tokyo (Narita) and Osaka (Kansai).

The flagship airports in Japan’s set of 27 include Narita, the 22-year-old international airport that struggles to serve the massive Tokyo metropolitan area of nearly 30 million people. Osaka is served by Kansai, an offshore airport opened in 1996 to replace the dowdy prewar Itami airport that was officially known as Osaka International. The old airport afforded quick access to central Osaka and was close to the historic old capitals of Kyoto and Nara visited by tourists. Only ten miles from downtown Osaka, however, the airport contended with noise complaints from residents (Wallace: 2006). On the other hand its locational convenience preserved its attraction for travelers, and Itami has been renovated — its number of daily domestic flights is rising whereas Kansai’s domestic business is declining.

A new US\$ 3bn airport was opened at Kobe in 2006. Nagoya also got its own international airport in 2006 (*ibid.*). The second runway that opened at Tokyo’s Narita International in 2002 increased the number of annual landing and take-off slots from 135,000 to 200,000. The Japanese government has since tried to extend the second runway but local farmers refuse to sell their land –



landowners remain angry about the way neighbours were treated in 1960s when planning started. A fourth runway is under construction at Tokyo's Haneda airport, Asia's busiest. Due for completion in 2009 the runway is expected to increase the number of annual landing and take-off slots from 285,000 to 407,000 (*Airline Business*: June 2005, 21 (6) 58). In Taiwan, a second terminal was opened in mid-2000 at Taipei's Chiang Kai Shek International, allowing 17m more passengers to be handled annually.

In South Korea, Incheon airport (Seoul) opened in 2001. It was built on reclaimed land 50km from the city. Seoul's Incheon replaced Gimpo which was then dedicated to handling domestic air traffic. Similarly, in Bangkok, Thailand, certain grades of traffic were retained at Don Muang airport after the US\$ 14bn Suvarnabhumi ("golden land") international airport opened 30km from the city on drained land ("cobra swamp") following 40 years of planning. Handling general aviation, charter flights, VIP flights and aircraft maintenance, Don Muang received an unexpected boost from traffic deflected from its successor. Within four months of its opening at the end of September 2006, Suvarnabhumi was partially closed due to major technical problems. Low cost carriers were in any event reportedly wanting to relocate to Don Muang because of its lower landing fees (*New York Times*: 24 December 2006).

The construction of new terminals for low cost airlines has been a feature of the last decade. Asia's first budget carrier terminal opened at Kuala Lumpur's international airport. Immediately thereafter a start was made on building a replica facility at Kota Kinabalu airport in Malaysia. (*Airline Business*: July 2006 22 (7) 25). In the Philippines two new tourist airports (Iloilo and Silay at Negros Occidental) are being prepared to lure tourists to the less visited Visaya Islands (*Business Times Singapore*: 14 June 2006).

China is setting the pace for new airport construction in Asia with the mainland airport industry forecast to average 11% growth from 2006 to 2020. Presently, 47 new airports are being constructed at a total cost of US\$ 17.4bn. Instructions to Chinese planners to expand 73 airports and to move 11 are not included in the new build budget. Most of the airport projects are to be built in remote western China, but there are plans for a second Beijing airport (MacLeod, 2006).

China's raft of airport projects includes a third terminal at Beijing, a new relocated hub airport (Baiyun International) at Guangzhou and a new fourth national hub at Kunming that will eventually provide capacity for handling 60m ppa and 1.2m tons of freight (*Aviation Week & Space Technology*: 18 December 2006 38). In Shanghai, Pudong International Airport, one of the city's two international airports, will take a major step towards realizing its target of handling 100m ppa by 2020 when a new terminal opens in 2007. The new facility is designed to handle up to 60m ppa in anticipation of a huge influx of visitors for both the 2008 Beijing Olympic Games and the 2010 World Expo. About 70 million tourists are expected to travel to Shanghai for the World Expo (*Aviation Week & Space Technology*: 18 September 2006 68).

### ***Middle East***

The burst of airport construction in the Middle East includes a new terminal building at Queen Alia International Airport near Amman in Jordan (*Middle East Economic Digest*: 6 October 2006, 23). In Saudi Arabia, the Hajj terminal King Abdulaziz International in Jeddah is being upgraded; 1.2m pilgrims used the terminal in 2005 (*Middle East Economic Digest*: 15 December 2005, 50(50) 25). In Dubai, the grandly named World Central International Airport commissioned in 2006 will supplement the capacity at Dubai International. Forty kilometers away, that facility is itself undergoing a US\$ 4bn extension to enable it to handle 60m ppa (*Airport Investor Monthly*: April 2005). Expansion plans for the new airport have been costed at US\$ 8.1bn and target 120m passengers in 2050. The total annual passenger capacity at the two Dubai airports will be 190m ppa (*Business Times Singapore*: 14 June 2006). In Qatar, US\$ 5bn is being spent on New Doha International Airport. Some first-generation city airports are being redeveloped for other uses rather than being retained as airfields. In Jeddah for example, the old city airport on 12km<sup>2</sup> is being converted into a complex of offices and residential towers containing approximately 2,000 apartments (*Middle East Economic Digest*: 3, 24 November 2006 25).

### *India*

In keeping with the Asian experience generally, there is significant upgrading and additional capacity occurring at airports in India. Inefficiency as well as image have spurred changes at New Delhi, only recently condemned by a visitor as a “fourth world provincial bus terminal” (*Miami Herald*: 20 January 2007). In 2005 a second runway was under construction at New Delhi. Similarly, a second runway is planned for Mumbai, the busiest airport in India. The politics of development have intruded: the bid documents indicate that it is the responsibility of the airport operator to clear the surrounding shacks, but the state government will not allow that for fear of losing votes (Mathews: 2005).

The new international airport at Hyderabad (Rajiv Gandhi airport) was proposed in 1996 when Begumpet was handling 1.2m ppa. The project began in 2002 on 5,449 acres (*Airport Investor Monthly*: April 2005). Modernisation of Belgaum Airport in 2005/6 included runway extension, construction of a peripheral security surveillance road, and installation of a new runway and apron lighting system (*New India Press*: 24 November 2005).

Construction of Bangalore’s greenfield international airport (Devanhalli) commenced in 2005. Scheduled to finish in 2008, the airport will vastly increase the limited 330,000 ppa capacity at the existing airport. The experience of the design-build-finance-operate contract at Devanhalli involving Siemens, Swiss Zurich Unique, the state government and the local airports authority (25%) (Mathews: 2005) may set a precedent for subsequent development. In mid-2005 it was reported that India was developing a model private-public concessioning agreement to facilitate modernization of 30 non-metropolitan airports plus another eight on greenfield sites. The Indian government was also contemplating a politically-independent airport economic regulatory authority (Mathews: 2005). The Sri Lankan government is spending US\$500m on expanding Colombo and building a new airport at Hambantota (*Business Times Singapore*: 14 June 2006). Pakistan is spending US\$ 500m on new international airports at Islamabad and Gwadar.

## **Airport agency**

Even an incomplete picture of airport provision and upgrading in Asia and the Middle East is startling. The statistics about the relentless extension of existing airports and the proliferation of new airports in the emergent / booming air traffic airline markets are awesome. The reporting is mostly neutral and often favourable, if not celebratory. It appears to be generally accepted that the extension of existing airports and construction of new airports in the new global North (the Orient) signals national and regional modernization and economic prowess. National and state capitals strive / bid vigorously to have their airports become gateways, and to rank high in the league tables of busiest, largest or best-rated airports.

Awe-inspiring in cost, scale and process, and seductive in design and name, the airport developments do however raise concerns. Three are addressed here: explanations about the need for airports, the consequences of airport construction (locally, regionally and beyond), and the absence of oversight and global planning.

### *Justifying airports*

It is common to present airport development as a passive response to high demand. It is as if airports were an inevitable concomitant of economic growth. Yet the idea that airports are hapless, servile agents that generously accommodate flight demand is mistaken. There is also an active agency to airport provision and development. Refusing airlines landing slots is evidence of active agency, and so too is providing capacity.

First, national political and economic ambition drives the establishment of regional gateway airports. Transforming capital city airport complexes into pivotal regional hubs is part of a strategic quest for regional survival, dominance and status. Second, the provision of airport space does not just serve existing or expected air traffic – on the contrary, it may actually help to generate air traffic. Like motorway construction, supply generates demand. In the case of airports, the interests that stand to benefit from airport development include consultants, architects (for “signature” terminals), designers, financiers, planners, contractors supplying building materials, fittings and fixtures, and passenger and cargo handling), operators, conces-

sionaires and airlines, aircraft manufacturers, petroleum companies. Increasingly these multinational agents operate in a global network.

Airports are big business (Graham: 2003) and are parts of internationalized design and management. Transnationality is not just about aircraft or passengers. Changi Airports International, for instance, manages Abu Dhabi and is advising on a new 40m ppa terminal at the airport. Copenhagen Airports is another influential actor. For reasons of scale and speciality, partnerships are common. Airport financing is also international. Goldman Sachs, the New York investment bank, has been an interested party in airport development. Australia's Macquarie Investments is a lender that specializes in infrastructure development. The group bids for airport properties, hoping to generate profits from cost-cutting and from steady cash flows. Corporate investors and airport construction specialists (there are about 60 major firms) have reportedly amassed US\$ 50bn for airport work in emerging markets (Timmons, 2006). Their collective work is made easier by weakly organized opposition from labour unions, environmentalists and representative passenger associations. Narita has never quite shaken off the spirited public protest and remains a defended space (Pascoe: 2001).

### *Airport impacts*

There is little original to say about generic airport impacts, but there is need to review the range and scope of impacts in the context of the pace and scale of airport developments in Asia and Middle East. A notable feature of the reporting on airport projects in Asia and the Middle East is the absence of public discussion and debate about their impacts. The effects of individual greenfield construction and brownfield extensions may well be attended to in documents available to developers and contractors, but the issues appear not to have surfaced for general public scrutiny. Certainly, they have not appeared in the English language media and aviation press, and have not lasted beyond any public consultation period. As an example, the desalination plant being built to provide water to the extended King Abdulaziz international airport evokes no editorial comment (*Middle East Economic Digest*: 28 July 2006 16).

The “negative externalities” of airports are well known. Costed or not, compensated or not, significant disruption is borne by individuals and communities who happen to live near the land route to the airport or under a flight path. The short-term hazards and inconvenience of round-the-clock construction traffic, building noise and dirt is easy to overlook in environmental audits that focus on ameliorating the effects of post-construction airport operations.

Air and noise pollution from aircraft are perhaps the most obvious adverse effects associated with airports. Maintaining an airport’s function with increased and continuous streams of supplies is another side effect of additional provision. Securing an airport’s demand for fresh water, electricity and energy for heating, cooling, lighting, and service delivery is likely to put considerable pressure on local utilities, and to create conflict. The generation and distribution of waste is a major task (Pitt *et al.*: 2002). In greenfield airport projects especially, land grabs involving loss of farmland, residential land, natural recreational resource and wildlife habitat have preoccupied protesters in the past, at sites as widespread as Narita and Manchester. In India, China and the Middle East citizens appear quiescent. Are they reassured by environmental impact statements and public participation, or overcome by inevitability? Is conformance a social expectation?

One facet of environmental change has been documented closely for three of Asia’s completed airport projects. Notably, Kansai required construction of an artificial 510ha island in Osaka Bay. Building Singapore’s Changi airport in the late 1970s (and extension in the 1990s) involved reclaiming 700ha from the sea. Approximately 307Mm<sup>3</sup> of materials (excavated marine mud and dumped soil and rocks) was moved for Hong Kong’s new Chek Lap Kok; the airport eventually perched on an island three times its original size. Approximately 5,615ha of tidal land were reclaimed for Seoul’s Incheon airport in the 1990s. Measures to combat subsidence, ground water contamination and flooding further altered the natural environment (Douglas and Lawson: 2003).

The effects of airports on the immediate physical environment need to be considered alongside their impact on the built environment. The neighbourhood development that airports attract includes not just industrial parks, car rental parks, but also a new generation

of extensive public facilities. Vast in scale, complex in function, and employing thousand of workers, super airports have become edge cities in their own right.

The Free Economic Zone at Seoul Incheon is a 20,900ha development comprising hotels, office complexes, a convention centre, a cluster of digital techno-complexes, and sports and leisure facilities, including a golf course (Ilbo: 2004). Guangzhou, China's third major air hub, is building a 10,000ha economic zone around its new Baiyun International Airport (*Aviation Week & Space Technology*: 18 September 2006 68). Positioning itself as the gateway to China, Hong Kong's airport is becoming part of a SkyCity that is to occupy a 1Mm<sup>2</sup> landscaped peninsula. Not far from a Disney theme park, the first phase of airport-induced development includes AsiaWorld-Expo (an international exhibition centre), SkyPier (a cross-boundary ferry terminal) and a 9-hole golf course. Future phases will consist of a business park, hotels, and leisure and entertainment facilities. Construction of a second major hotel on the waterfront started in 2006. Soon to be opened, terminal 2 will also house SkyPlaza, an office complex and a shopping and entertainment mecca ([www.hongkongairport.com](http://www.hongkongairport.com). 4 October 2006).

In the Middle East, an 22,533ha "aerospace cluster" at Jebel Ali, Dubai, is an integral part of the country's new World Central International airport (Timmons: 2006).

In Jordan, a US\$ 142m mixed-use city is being built near King Hussain International Airport. Called Al-Qasaba Residential City, its 28ha of residential, commercial and leisure space is expected to be finished in 2008 (*Middle East Economic Digest*: 8 September 2006 30).

Airport complexes are sustained by their air traffic and by the overland and occasionally marine access routes that serve them. Bridges, motorways and rapid rail transit routes have all been provided in Asia and the Middle East. Chep Lap Kok is reached by a double deck suspension bridge. Incheon is reached via a 4km long suspension bridge which carries one end of a 40km 6-8 lane highway and a 40km double track railway (Douglas and Lawson: 2003). Devanahalli will be connected to Bangalore by a 35km rail link; Beijing is building a 27km rail link to downtown (Mure: 2005).

Provision, use and maintenance of all these connectors is likely to have had (and continue having) considerable impacts on land use and lives.

Evidently, airport development triggers consequences and alterations close and far from runways and aprons. Research in the USA is not specific about this reach, but it does indicate that a 10% increase in passenger boardings in a metropolitan area leads to an approximately 1% increase in employment in service-related industries (Brueckner: 2003). The local knock-on effects of airport development are significant enough, but in a globalised world attention should also be paid to the effects that major airports may have on a broader space. In the case of Asia and the Middle East the outward ripples seem likely to reach Europe and North America. In those mature air traffic markets airports have been operating at or beyond capacity even before the stimulus that airport investment in Asia and the Middle East will give to long-haul air traffic growth. The flapping of wings in the Orient may be expected to create turbulence in the Occident.

### ***Oversight***

In a world of hyper-mobility ushered in partly by air travel and the airport network that enables it, it comes as no surprise that there are congresses to discuss airport development. Unsurprisingly too, these are not hosted by aviation agencies such as ICAO and IATA whose historic focus has been the airlines. Since its first meeting in 2004, corporate sponsors feature large among the sponsors of the annual “Global Airport Expansion Congress.” With good reason, the congress meets in 2007 in China. In May 2007 there is also a summit meeting about airport construction in China – the meeting in Xi'an is to focus on building secure, sustainable, modern airports in the next 20 years. It would be surprising to see any steps being taken to review airport development critically.

It is an ironic characteristic of modern airport development that while airports serve an interconnected world their planning occurs only within countries. Jurisdictional authority remains nation-based in a globalised world; civil aviation authorities are nation-based; the umbrella organization Airports Council International has 650 members. In a joined up world — or at least in a joined up



hemisphere — the invisibility and lack of transparency about airport development is surprising and worrying. As this preliminary research into contemporary airport development in a fast growing market shows, it is difficult to acquire a comprehensive picture of even baseline activities such as project start dates, project completion and costs. Airport reporting and planning is multi-phase, invariably delayed, and works with estimated and target capacities and budgets. In the absence of a central clearing house of information, costs and standards, we have only a fragmented view of airport development in hot spots; the picture is not just awesome, it is almost incomprehensible. No regional or global agency registers, balances and adjudicates national and regional airport development. There has never been any attempt to manage the world network of airports as a single system, and research into airports perpetuates silo-vision. Research into benchmarking airport performance against several criteria confirms the problem of comparability and overview (Graham: 2005; Upham and Mills: 2005). There is urgent need to break from this tradition and to tool up for seeing airport development as a regional if not a global concern.

### **Conclusion**

Airports, it has been said, are “iconic spaces of the new world order” (Sheller and Urry: 2006 219). The reference is partly to introverted studies of airports as almost self-contained non-places or as trans-national places severed and shielded from their host cities. Airports signal our age also by virtue of being cosmopolitan as well as places of incidental and fleeting contact. Alternating feverish activity and boredom order events, and surveillance cameras monitor human movement in controlled spaces (Gottdiener: 2001; Cresswell: 2006).

Airports may also be considered iconic in a political-economic and geographical sense: in their sheer being they express an internationalism that is at once powerful and weak. A handful of major airports in key world and regional cities exert a powerful magnetism on air traffic and the location of subsidiary business and leisure activities. Airports give value to location and are part of geographical boosterism. An array of powerful multinational interest groups drives and feeds off airport development round the globe.

Organising to challenge or otherwise resist relentless development appears futile. Concerted international planning to review and coordinate sustainable airport development has yet to start. Projects with international significance are not being monitored and are not coordinated. Competition for profitable traffic is blind. The drive for additional capacity in emerging markets is about catch up, but is also about knock on. The frenzied pace and gigantic scale of airport development in Asia and the Middle East has the hallmarks of hubris; the rash of construction looks akin to the mania for railway construction more than a century ago.

Gordon Pirie<sup>1</sup>

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