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The Dark Side of Aeromobilities: Unplanned Airport Planning in Mexico City

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ABSTRACT  Land-use conflicts, noise and health problems, local air pollution, decreased urban quality and affected liveability are considered amongst the core impacts and consequences associated with global airports, all of which have largely been individually documented. Through a case study of Mexico City International Airport (MCIA), this article argues that a more integrated focus that brings such various issues and perspectives together is needed in order to widen the understanding of the existing relationship between socio-spatial and environmental effects, increased aeromobility, airport siting conflicts, airport urban surroundings and globalization. The present study of MCIA suggests that local players and airports are not just passively influenced by processes of globalization and aeromobilities, but also that such processes disentangle a wide array of socio-spatial and environmental consequences that depend on ad hoc local contexts. Hence, the article follows the argument that a much stronger focus on the planning process of airports is needed at local and regional scales, while a larger debate regarding the regulation of increased global aviation ought to be raised in national and international contexts.

Introduction

Global air travel has increased dramatically during the last couple of decades. There are over four million air passengers travelling every day, 1.9 billion air journeys each year and, at any time, 360,000 passengers in flight only above the USA (Urry 2007). The growth of international air travel has a profound impact on the spatial organization of an increasingly globalized society. Air travel, modern life and globalization have become more and more intertwined in a time where flying is mainly seen as related to a range of new opportunities for people to be aeromobile on a global scale (Kesselring 2006; Nowicka 2006; Cwerner, Kesselring, and Urry 2009; Lassen 2009). With respect to increasing international air travel, airports are fundamental nodes in the global air transport system. Airports are turning into small-scale global cities and their developments are
strategically significant within the global competition of places, cities and regions (Urry 2007; Kesselring 2009).

In addition to serious global environmental impacts related to flying (see Sausen et al. 2005), there exist a number of local socio-spatial and environmental consequences for the citizens living in the surrounding areas of airports. The impact of air transport on the ground is significant and includes land take for airports, terminals and runways; noise and air pollution from aircrafts; pollution from buildings; air pollution and noise from access infrastructure and road transport serving the airport (Whitelegg 1997, 86). Until now, the socio-spatial and environmental consequences of air travel have been notorious in conventional airport research, and social science has just recently begun to enquire into the social consequences of increasing air travel (Kesselring 2009, 40–41).

Recent research has focused on documenting individual socio-spatial or environmental consequences associated with airports, such as land-use conflicts, noise and health problems, air pollution and reduced urban quality (Cidell and Adams 2001; Hygge, Evans, and Bullinger 2002; Yu et al. 2004; Rodrigue, Comtois, and Slack 2009). By acknowledging the relevance of these individual studies, this article argues that a more multiple focus that combines such different perspectives is required to widen the understanding of the existing relations between socio-spatial and environmental consequences, increased flying, airport sites and globalization. In this respect, the article follows the footsteps of William Fielding Ogburn’s classical work ‘The Social Effects of Aviation’ (1946), which addresses the ways through which aviation could cause social change in various domains such as leisure, family, population, cities and international relations. The article, therefore, explores socio-spatial and environmental consequences of airports not only by looking at the quality of social life itself, but also by including a number of elements from the physical environment where people’s everyday life takes place (see also Jensen 2013).

In addressing the above, the present research is designed as a case study, which focuses on Mexico City International Airport (MCIA) and its urban surroundings. Until recently, research in the field of airports and aeromobility has been largely carried out in the context of developed countries, leaving aside critical cases situated in rapidly industrializing economies with less developed institutional settings. MCIA is surrounded by one of the most densely populated areas in Mexico, where several million people inhabit and are confronted by a high level of socio-spatial and environmental conflicts. MCIA is one of the top 50 global airports in terms of annual operations and number of passengers, and the busiest in Latin America. In 2011, the airport had over 1000 take-offs and landings per day and served over 26 million passengers (AICM 2012). Despite a major economic crisis affecting the country during the mid-1990s, the airport’s average annual growth rate in terms of passenger traffic has on average exceeded 4% during the past 20 years (SCT 2012). In agreement with other airport studies (e.g. Cidell 2006, 651), the case of MCIA documents that a nation, a region and a city hosting a large-scale airport are not just passively influenced by the processes of globalization and aeromobilities. Moreover, the study of MCIA additionally documents that such processes yield diverse socio-spatial consequences depending on the local contexts. The article, therefore, follows the argument that a much stronger focus on the airport planning process is needed locally, and that a more thorough debate on the regulation of increased global aviation needs to be raised internationally.
The article is divided into five sections. Firstly, it frames the issue of global airports and increased air flying in relation to local contexts and the impacts inflicted upon them. The second section describes the methodology used and the sequence followed in the study. Thirdly, the article describes the context and history of MCIA. This is followed by an in-depth analysis regarding everyday life in the airport surroundings, which places emphasis on local socio-spatial and environmental impacts generated directly or indirectly by increasing aeromobility. Also in this section, the article addresses the socio-spatial conflicts that stemmed from siting a new airport for Mexico City and relates them to other anti-airport movements around the world. Finally, a series of conclusions are drawn and a number of future perspectives regarding aeromobility research are suggested.

Understanding Global Airports and Local Consequences

Conventional mainstream air transport research has been traditionally founded on a rationality of ‘predict and provide’ (Whitelegg 1997; Lassen 2005). This understanding has a strong focus on the estimate of air transport growth to provide the required infrastructure and to determine aircraft supply and airport capacity. The focal point of this approach thereby relates to an empirical-analytical paradigm in the sense that airport operations, benchmarking and performance are given strict priority (Humphreys and Francis 2000; Graham 2001). In such a tradition, the airport is understood as a ‘natural’ hub for global air travel. The social motives as well as the socio-spatial and environmental consequences of air travel have more or less remained a ‘black box’ (Urry 2007). Generally speaking, this way of understanding and researching air travel is represented by journals such as The Journal of Air Transport Management and other sorts of management journals (see Czerny et al. 2008; Graham and Forsyth 2010). Moreover, as Cresswell (2008) argues, ‘airport books tend to be general in tone and overly glamorize the airport as a global node of and site of transnationalism’ (Cresswell in Salter 2008). In this light, less research has focused on trying to ‘unpack’ and understand the airport (Cresswell 2006) not only as an infrastructure location or global flow machine designed for the cosmopolitan traveller, but also in the context of its social, physical, architectural, geographical and environmental contexts.

This article is theoretically founded in the emerging interdisciplinary field of aeromobilities research (Lassen 2005, 2006; Kesselring 2006, 2009; Cwerner, Kesselring, and Urry 2009), which is a part of the ‘mobilities turn’ (Cresswell 2006; Urry 2007; Jensen 2013). The new aeromobilities research focuses particularly on how aeromobilities are produced, reproduced, performed and regulated in relation to various spaces, networks, systems and environments, as a way of ‘opening’ the ‘black box’ of flying. The theme of aeromobilities research, instead of being regarded only as a simple air transport theme, indicates a need for bridging multiple scales connecting international air systems to particular local, urban transformation processes and their consequences (Jensen and Lassen 2011). Cwerner, Kesselring, and Urry (2009) formulate a research agenda for such aeromobilities research, which amongst several topics calls for a greater transdisciplinary focus to research. Moreover, he is arguing for a stronger focus on everyday life and differentiation. The case study on socio-spatial and environmental consequences of MCIA, therefore, takes a point of departure in such transdisciplinary and multiple approaches, which specifically focus on everyday life and differentiation of social life in relation to aeromobilities.
Theoretically, the airport has been described and understood in different ways thus far. Scholars and commentators within the social sciences have portrayed the airport as a pure ‘flow machine’ (Fuller and Harley 2004), as ‘mono-cultural zero-friction enclaves’ (Hajer 1999) or as a sort of ‘third culture’ (Eriksen and Døving 1992) that exists outside or on the side of the normal cultural context in a global socio-technological system of air travel. The airport has been also depicted as a non-place (Augé 1995), which is non-historical, non-relational and has no self-identity, while shaped by the logic of ‘space of flows’ (Castells 1996). However, such an understanding has been questioned. Cresswell (2006) problematizes, the understanding of the airport as a pure non-place inside the global system of air travel but outside history (see also Urry 2007). Moreover, in his analysis of Liverpool Airport, Adey (2006) shows that airports are not ahistorical and interstitial spaces. Adey argues that airports are embedded within the times, spaces and uses from which they are produced and consumed, meaning that there are other contextual geographies to airports.

Fuller and Harley (2004) argue that airports are nodes in a global network of travel, trade, architecture, design, technological innovation, security and more. Airports are part of a global ‘city of bits’ that often makes it difficult to clearly define the geography of the airport (Fuller and Harley 2004, 5). Furthermore, airports do have relative fixed coordinates, but their vectoring ensures that it is hard to know where an airport ends and something else begins (Merriman 2007, 109–110). As Fuller and Harley (2004, 118) point out:

... the runway, apron systems and the terminal buildings are only a fragment of the airports’ impacts on the environs around it. Other flow infrastructures like highways, bridges and tunnels virally replicate around airports, as do ancillary businesses, such as global logistics companies, airline service providers, hotels and conferencing facilities.

Furthermore, in a study of major US Airports, Cidell (2006) illustrates how airports are not just passive players of globalization processes and infrastructural extension. Cidell (2006, 651) stresses that ‘history, governance, airline service and regional economic situation all play a role in mediating the effects of the processes of globalization on individual place, and in shaping those processes in turn’. In line with this, Kesselring (2009, 48) argues that airports are not only interfaces of global space that stabilize the cosmopolitan mobility, but they are just as highly territorial and bound to social, cultural, economic and political norms of their location. In this sense, the airport materializes the tension and conflicts between various local, regional, national and global interests (Kesselring 2009). It also means that the global airport is a space filled with controversy and that it necessarily relates to a number of socio-spatial consequences that inflict on local populations that inhabit the urban surroundings of such airports.

The above theoretical underpinnings suggest that the present study of MCIA be framed in relation to its local context, meaning and history, as well as the urban processes that locally relate to it. This implies a focus not only on a specific type of negative consequence but on several sorts that are relevant to how the socio-spatial and environmental impacts of the airport on its urban surroundings are assessed. Hence, the incorporation of various forms of transdisciplinary knowledge is required to generate a better understanding of such various airport impacts.
Methodology

The present research has been designed as a qualitative phenomenological case study, with field observations as central data collecting technique. MCIA is hereby understood and framed as an extreme case, mainly because the airport is located within one of the most densely populated areas in Greater Mexico City, characterized by a series of severe socio-spatial and environmental issues. The reason for selecting such a case is that it allowed us to better and more explicitly understand some of the local socio-spatial and environmental problems related to global flying. These problems are, to a considerable extent and on various scales, certainly visible around a number of global airports, and this raises a number of critical questions in relation to increasing air travel. Since the urban areas surrounding MCIA are characterized by lower personal security, large groups of low-income people, a number of social problems and few public records in the field, our study has largely been driven by the available opportunities for obtaining data (see below). To a high extent, the case study has, therefore, been conducted by the notion of ‘what is possible’ instead of ‘what is optimal’. This is reminiscent of the lack of studies that explore the socio-spatial and environmental consequences of aeromobilities in less developed countries. Therefore, the case study should mainly be seen as part of the first attempts in social science to explore such types of consequences in relation to (global) airports in less developed countries.

The case study was designed in two steps. Firstly, the selection of districts around the airport was based on literature studies of local research, newspapers and reports associated with airport issues pointing towards some districts as particularly problematic. As an analytical strategy, we started by visiting diverse districts within the area shown on the key map of the article (see Figure 1). In total, five fieldtrips were carried out to the various districts. Each visit lasted about six to eight hours and consisted of a number of stopovers within specific districts in close proximity to the airport (see Figure 3). While some districts were more accessible in terms of walking through and getting a good sense of them, others were not entirely safe particularly within specific areas located towards the southern and eastern limits of the airport. Different data collecting techniques were used. Several photographs were taken during the fieldtrips (see photo compilation and maps at: http://people.plan.aau.dk/~dgalland/mexicocity). Moreover, five unstructured interviews were randomly made based on local people’s willingness and availability to participate. The interviewees included local residents as well as business owners in these districts. The unstructured interviews were carried out in districts 4a, 4b and 4c, but for security reasons it was not possible to conduct interviews in districts 3a, 3b and 3c (see Figure 3).

Secondly, the Cuchilla del Tesoro district (see district 2, Figure 3) was investigated more in depth because of the specific character of the issues addressed in this article. In this sense, the district’s positioning (consisting of a densely populated area located just over 100 m away from the airport’s take-off runway axis) and its high degree of vulnerability in relation to airport environmental impacts were identified as key criteria. In this district, five more structured interviews were carried out to determine how the airport’s operations (take-offs, landings, aircraft taxiing and a large aircraft maintenance centre) tend to interfere with the residents’ daily life and well-being. The selection of interviewees was made through a contact person whose family lived in the district and who also knew other residents who had long resided therein. The contact person helped out by finding neighbours willing to participate.
Figure 1. Urban agglomeration around MCIA exceeding five million inhabitants. Map data 2013 © Google, INEGI.
The following section provides a descriptive historical analysis of MCIA, which serves as a foundation to qualify the socio-spatial and environmental consequences associated with everyday life around the airport’s urban surroundings.

The Context and History of MCIA

As of 2013, Greater Mexico City stands as the most populous urban agglomeration in the Americas with a population of nearly 21 million inhabitants (INEGI 2012). The metropolis is located on a high valley at 2240 m and is surrounded by mountains along most of its perimeter. Greater Mexico City has an extension of 7854 km² spreading over three federal entities: the Federal District or Mexico City (16 boroughs), the State of Mexico (59 municipalities) and the State of Hidalgo (1 municipality). Since the 1950s, a number of socio-economic factors (i.e. a significant population boom, increased vehicle proliferation and soaring industrial activity) in combination with Mexico City’s high altitude have exacerbated air quality in the metropolitan area, thereby exposing human health to greater risk (e.g. Molina and Molina 2002, 2004). Several environmental programmes intended to improve air quality and to mitigate health impacts in Greater Mexico City have been put in place since the late 1980s, which have to some degree contributed to lessen negative effects (Davis 2008; SMA 2009).

Sited only 5 km away from the historical centre of Mexico City, MCIA is without doubt a main contributor to the above controversial scenario not only in terms of health and environmental impacts, but also as far as socio-spatial implications are concerned. MCIA is situated at the northeast of Mexico City and is surrounded by an urban agglomeration that covers the highest population density in the whole country. This region comprised the municipality of Ciudad Nezahualcóyotl (1,110,565 inhabitants) and five boroughs, namely Iztapalapa (1,815,786), Gustavo A. Madero (1,185,772), Cuauhtémoc (531,831), Venustiano Carranza (415,007) and Iztacalco (384,326) (INEGI 2012). Altogether, the sum of inhabitants who live within the boundaries of this predominantly low-income area surrounding the airport equals that of the whole population of Denmark (see Figure 1).

For the most part, the development of air travel in MCIA has been a story of growth paralleled with the most important airports in the world. As of late 2012, MCIA embraces the largest number of aircraft operations in Latin America and serves the second largest number of passengers in the region after Sao Paulo (AICM 2012). In terms of both aircraft operations and passenger traffic, MCIA’s annual growth rate has almost steadily increased during the past 20 years, except for a couple of years following the Mexican economic crisis of 1994, and more recently due to the swine influenza outbreak in 2009. As of 2011, however, passenger traffic has reached a maximum high and the number of aircraft operations continues to follow its former incremental trend (see Figure 2).

MCIA is situated in a formerly outlying area that served for military purposes, which remained exempt from the urban sprawl until the 1960s. The airport was officially inaugurated for commercial use in 1952 and operated under a single terminal concept handling both domestic and international flights for several decades. Since the 1980s, a steadily rising air-travel demand created a need for expanding the airport’s limited infrastructure. By the mid-1990s, a new international terminal was built and subjected to constant upgrading during subsequent years. Without any potential room for further expansion, the airport premises remained inadequate in handling an increasing number of travellers and aircraft
Figure 2. Annual passenger traffic and operations at MCIA (1990–2011).

Figure 3. Districts in close proximity to the airport, wherein the empirical study was carried out. Map data 2013 © Google, INEGI.
operations. The beginning of the 2000s witnessed a contentious dispute concerned with siting a new airport, a process that disentangled serious land-use conflicts and political turmoil (see the next section). The idea to site such a new airport was finally rejected but followed by a new government decision to site a new terminal (Terminal 2) within the original airport premises. This terminal was inaugurated in 2008 and required the construction of significant infrastructure inside densely urbanized areas to facilitate access from the west side of the city towards the new premises.

Growth pressure on MCIA can also be understood as an outcome of recent institutional and market changes. The Mexican government passed the *Ley de Aviación Civil* (Law of Civil Aviation) and the *Ley de Aeropuertos* (Airport Law) in 1995, which established new rules regarding the liberalization and entry into the aviation sector. These laws were succeeded by important development shifts during the following decade, such as the privatization of Mexico’s major airlines and the introduction of low-cost carriers by the mid-2000s. By 2008, these latter carriers had already captured over 30% of the airline market in terms of passengers (Ros 2010). Additionally increasing air travel by means of low-cost carriers in Mexico largely came to substitute traditional modes of transportation, most notably long-distance buses. At the local level, this situation has contributed to exacerbate traffic pressure and congestion within the boroughs surrounding MCIA.

In relation to several other megacities around the globe, the implications associated with an ever-increasing demand for air travel and the need for significant road infrastructure to access the new airport terminal premises require an understanding concerned with the socio-spatial and environmental impacts and consequences in the everyday life context of the several million inhabitants who live and work within the airport’s surroundings (see Figure 3).

**Living Under the Corridors: Everyday Life in the Airport Areas**

MCIA is part of a large socio-technological air system that for the most part has been explored from the inside. Lassen (2009) has described such systems aided by the notion of ‘corridors’. In so doing, the argument follows the premise that global high-speed air travel mainly takes place in airports, aeroplanes, trains and metros, motorways, cars and taxis, hotels and business offices, all of which are organized around corridors. Such corridor movements deliver both logic of action and material spatial organization of contemporary social practice. It is a spacious organization, where corridors function as a selection mechanism, capable of picking and choosing so that the traveller is distributed in accordance with the logic of the corridor — a logic that is anchored in a ‘space of flows’ (Castells 1996).

Using Goffman’s (1959) work, we can frame the system of corridors as the settings of performance for the cosmopolitan tourists (Bauman 1999). Corridors and their surrounding areas deliver the ‘settings’ for frontstage and backstage performance (Goffman 1959). We perceive the settings as the airport smooth corridors, which deliver the equipment needed for frontstage performance of the kinetic elite (Urry 2007). Again, according to Goffman (1959), the frontstage could be considered as ‘... the part of the individual’s performance which regularly functions in a general and fixed fashion to define the situation for those who observe the performance’ (32). Many of the areas surrounding the airport and the corridors are used for backstage performance. The backstage of the airport is
thus framed and understood herein both in terms of social and physical processes (see also Jensen 2007). According Goffman (1959):

\[\ldots\text{the back region of a performance is presented, being cut off from it by a partition and guarded passageway. By having the front and back regions adjacent in this way, a performer out in the front can receive backstage assistance while the performance is in progress . . . .} (114–115)\]

In this article, the settings for backstage performance are not only created by many airport workers (Sheller and Urry 2006), but also by the thousands of people living and working in urban areas surrounding the airport.

Except for the district of Jardín Balbuena, every district surrounding MCIA is characterized by a predominantly low-income population living in densely built, low-rise dwellings. To a considerable extent, road infrastructure is defective within several of these districts, and an undersupply of basic services is also perceptible, particularly in the eastern neighbourhood areas. Moreover, crime and insecurity seem to be constant threats to a high percentage of residents. This situation can be largely contrasted with the settings for frontstage performance at the airport with its ‘icons signifying toilets, banks, duty-free shops, departure gates, customs \ldots’ based on ‘high-speed travel, efficiency, a hygienic and bureaucratized social environment that offers little resistance, and haute-gamme consumption’ (Eriksen and Døving 1992, 5).

Furthermore, regarding the backstage of MCIA, it is almost ironic to realize that for years several sets of grandstands stood along the airport’s southwestern boundary, where hundreds of people living or working in surrounding areas used to sit and watch aeroplane take-offs and landings every day. Despite important traffic and health risks due to close proximity to major transit roads and the runway grounds themselves, this ‘entertainment’ activity persisted during the 1980s and 1990s. Today, this phenomenon has somewhat ceased to exist as higher walls and fences have been built to obstruct visibility, although spectators and bystanders still position themselves on pedestrian staircases and bridges to watch aircraft activity within the airport’s premises. In this sense, there is no tourist performance without any assistance from the vagabonds (Bauman 1999) (see field-trip pictures at: http://people.plan.aau.dk/~dgalland/mexicocity, Behind the corridors).

**Health and Environmental Impacts**

Aircraft noise-induced hearing loss and other negative effects on human health have been explicitly addressed by scientists, particularly with respect to psychological and cognitive repercussions in school children (Evans, Bullinger, and Hygge 1998; Hygge, Evans, and Bullinger 2002). Noise exposure due to aircraft constant take-offs and landings impacts heavily on the citizens who live and work in close proximity to the airport’s boundaries. Located right next to MCIA’s northeastern limits, the district of Cuchilla del Tesoro has dwellings and shops existing at only 150–200 m from the take-off runway axis (see Figure 4).

Our field study indicates that resident perceptions regarding different types of distress product of living in close proximity to the airport vary in accordance with relative location of the district. A prevailing concern relates to the impact that aircraft noise may inflict on residents’ health. Air pollution and the constant construction and upgrade of road access
infrastructure during the past years have been similarly worrisome to the well-being of local residents. Cuchilla del Tesoro is probably the most impacted district in terms of noise from constant take-offs and landings, given its close proximity to the airport’s runways. In what follows, the local newspaper Reforma offers a description regarding everyday life in this district:

Street vendors, workers and other residents coincide in that the early morning hours are nearly unbearable. This occurs at 6 am sharp when pilots start the turbines and head up to the runway for take-off. When approaching the terminal (Terminal 1), aircrafts almost reach the perimeter wall, about 10 m away from the district’s market. Noise generates intense vibration in all houses (own translation)

Another interview in the same newspaper suggests that aircraft noise seems to have a direct impact on children’s behaviour in the district:

It is commonly perceived that children who attend summer school here see their behaviour altered; they seem more nervous and aggressive than the average (own translation)

An official complaint submitted to the North American Commission of Environmental Cooperation (CEC 2002) by a group of organized residents living in the district of Jardín Balbuena is indicative of the general concern regarding aircraft noise impact on human health. In this complaint received by the CEC Secretariat, local residents asserted that the federal government failed to effectively enforce its environmental laws with respect to noise emissions originating at MCIA. Amongst others, the complaint specifically emphasized the transgression of an official standard for point source emissions (NOM-ECOL-081-1994) that establishes a maximum allowable limit at 65 decibels (INE 1995). The residents’ assertion was founded on evidence indicating that aircraft
noise emissions result in hearing loss, lessened children’s academic performance (compared with other districts) and other negative consequences due to loss of sleep.

In responding to this public complaint, the government of Mexico clarified that the alluded noise standard was not transgressed as it only applied to fixed sources, and that the applicable standard (namely NOM-036-SCT3-2000) for mobile sources such as aircraft established higher maximum allowable limits. The response pointed out that the agreed percentage of the nation’s air fleet at that time had decreased noise emissions within the times provided in such a norm, and thus that the government had effectively enforced its environmental laws. After analysing the government’s response to this complaint and based upon its explanatory rationale, the CEC resolved not to recommend the preparation of a factual record, which meant that the case did not further proceed.

What this case actually shows is the existence of law gaps and institutional mismatches regarding airport and aircraft noise regulations. First, a judicial stance concerning how different norms regulating airport and aircraft noise should supplement or discount one another seems to be lacking. Moreover, neither of the two norms above establishes ad hoc procedures that deal with noise emissions originating from mobile sources intrinsically linked to point sources. Secondly, the case also shows that different government entities regulate noise emissions through seemingly incompatible official standards. Whereas point source noise emissions are determined by an environmental standard established by one ministry, non-point source emissions are regulated by a transportation standard determined by another ministry. This institutional mismatch and the lack of harmonization between the norms weaken the possibility of mitigating the impacts stemming from aircraft noise. In addition, government ministries regulating a similar question under different policy domains give way to conflicting mandates in relation to a common concern. The case of MCIA therefore reveals that regulatory gaps and institutional mismatches tend to aggravate the negative consequences of increasing aeromobility on the backstage, where local residents inevitably bear with most costs.

The noise management approach used by the government and the airport in this case resembles what Faburel and Levy (2009) term the ‘technological legitimation’ noise model. Supported by central authorities and other stakeholders in the air-travel industry, this model attempts to rationalize the debate by legitimizing certain arguments and modes of action while also delegitimizing others. As Faburel and Levy (2009, 215–216) stress:

... with a strong emphasis on the physical sciences and technology, this model naturally encourages actions based on acoustics overlooking cultures, codes and regulations ... Supported by the technological legitimation, traditional airport expertise has disqualified local stakeholders by delegitimising the study of local impacts of aviation noise, making it harder for these to become subjects of both observations and debate.

Moreover, the MCIA case supports the findings by Faburel and Levy (2009) about the existing ‘... collective blindness to potentially complex and multiple effects of noise on local people’ (218).

Until now, it has not been possible for the local people living in the surrounding urban areas to put the local noise experiences on the agenda at all, despite the fact that recent evidence regarding aircraft noise emissions in the district of Cuchilla del Tesoro indicates
that measurements of up to 120 dB are common at the boundary dividing this dense urban settlement from the airport (Rojo-Ruíz 2008, 72). Beyond noise impact deriving from aircraft take-offs, landings and displacements in Terminal 1, point source noise pollution that originates from aircraft maintenance facilities also seems to constantly distress everyday life in such district while it might also probably transgress the above-mentioned point source norm NOM-081-ECOL-1994. An interviewee residing in this district comments:

( . . . ) at times during the night it gets too noisy due to living close to the aircraft maintenance area. It has become part of our everyday life, so we have no other means than getting used to it and fall asleep (own translation).

Beyond noise, other health and environmental impacts from aeromobility also derive from high traffic flows and the emission of pollutants into the atmosphere. Evidence collected by the local Environmental Secretariat indicates that pollutant emissions in the centre and northeastern areas of Mexico City are significantly high when compared with the rest of the metropolitan area (SMA 2009). In their latest annual report, the Secretariat attributed more than 80% of pollutant emissions to car traffic flows (SMA 2009, 56). Monitoring stations indicate that the distribution of contaminants in the airport’s surrounding districts is among the highest. Moreover, according to a recent study carried out by the National Autonomous University of Mexico, several scenarios (wherein emissions of pollutants such as nitrogen oxides, hydrocarbons and carbon monoxide are estimated) indicate that car traffic flow emissions within the airport’s neighbouring districts during rush hours are similarly amongst the highest when compared with other city boroughs (Lozano, Granados, and Antun 2008). The high concentration of pollutant emissions in the vicinity of the airport suggests that there might also be a direct correlation between air traffic emissions and a high degree of pollution in those areas.

New Terminal Access Infrastructure

The construction of new access roads in close proximity to MCIA has inevitably generated a scenario comprising winners and losers. The construction of Terminal 2 in recent years required the development of 11.5 km of new access roads, including the erection of two elevated roads (distribuidores viales) built on top of the already existing road infrastructure to facilitate car traffic flowing from the west and from major thoroughfares (see fieldtrip pictures at: http://people.plan.aau.dk/~dgalland/mexicocity, New airport infrastructure). Similar infrastructure was also built to connect both terminals along the airport’s south-western boundary, which also included the construction of a monorail line (aerotreño). The first elevated road connects an internal expressway (Circuito Interior) with Terminal 1, while the second one connects an internal throughway (Viaducto Miguel Alemán) with Terminal 2 (see Figure 5). Cutting through neighbouring residential and commercial districts, the erection of the elevated road section of such a throughway has notoriously inflicted upon aspects of urban quality, liveability and local economy. The following interview quotes from two residents living at MCIA’s adjacent district Colonia Federal illustrate these impacts:

The most recent issue has been the building of the new elevated road in Economía Avenue to access Terminal 2, which caused severe damage to the structures of
residents’ homes. From what I understand, neither the borough’s office nor the local
government assumed any responsibility. Noise is not a big issue in this neighbour-
hood, although we can always hear the starting of aircraft engines at 5 am (own
translation).

The building of new infrastructure in the proximity of the airport has obviously
affected us commercially … Our neighbourhood is now less connected (own
translation).

As shown in Figure 5, the elevated road section of Viaducto Miguel Alemán (built over
Economía Avenue alongside the eastern edge of Colonia Federal) creates a physical
barrier between the two local districts. This situation has evidently restricted pedestrian

Figure 5. Access infrastructure to MCIA’s terminals 1 and 2. Map data 2013 © Google, INEGI.
and local traffic mobility patterns and has also decreased the quality of the urban space by restricting the walkability pattern of local residents and workers in the area (see fieldtrip pictures at: http://people.plan.aau.dk/~dgalland/mexicocity, Colonia Federal). The construction of elevated roads have also caused the placing of advertising billboards on rooftops of residential buildings, thereby creating a form of visual pollution that affects the aesthetics of these districts (see fieldtrip pictures at: http://people.plan.aau.dk/~dgalland/mexicocity, Advertising rooftop billboards).

Beyond the nuisance inflicted on local residents during long construction periods, siting this type of infrastructure in the middle of mixed land-use urban areas is bound to cause property depreciation as well as damage to local businesses, leaving residents with no other choice, but carrying on with externality costs as well as the long-term economic and socio-spatial consequences associated with living or working at the backyard. In this light, the new infrastructure built to serve the airport is an example of a transportation network designed to favour the mobility of the ‘elite’ at the expense of local resident liveability. The dividing effect caused by this type of transecting infrastructure in deprived urban enclaves (such as Colonia Federal) can also be seen as a case of ‘socially segregated mobility patterns’ (Jensen 2007; see also Jensen 2013).

New Airport Siting and Land-Use Conflicts

The generation of land-use conflicts due to siting of new airports can be regarded as a negative socio-spatial consequence of increasing aeromobility. Since the 1970s, the rationality behind the construction of new airports has been in line with the argument about our societal ‘need’ for satisfying an increasingly mobile lifestyle. Ever since, political discourses throughout different countries have portrayed the subject of constructing new airports as a necessity to deal with the steady rise in air traffic that older airports cannot cope with. In making choices for potential airport sites, however, tensions across social and political lines can easily arise. Planning processes associated with these megaprojects has often led to controversial outcomes, most notoriously in the case of major cities where land is scarce and the number of potential users is ever increasing.

In such cases, governments tend to expropriate land of heritage value or properties that would be otherwise used for agricultural or recreational purposes. The case of land expropriation often leads to land-use conflicts, which commonly rise as a result of differing interests between different parties over the potential use of land. Not-in-my-backyard (NIMBY) reactions are usual examples of such land-use conflicts, which emerge as a result of public opposition in light of concerns about long-term social, economic and environmental consequences (Dear 1992). Along with decisions about siting nuclear power plants (Kraft 2000) or hazardous waste facilities (Kunreuther, Fitzgerald, and Aarts 1993), the issue of siting new airports is similarly characterized by such sort of reactions, where even harder public resistance can be expected if a siting process contemplates land expropriation.

The case of siting a new ‘global’ airport for Mexico City is illustrated above. Based on the argument that Mexico City’s two-runway airport had long exceeded its capacity, public officials announced in October 2001 the construction of a six-runway airport on the communal lands (ejidos) of Texcoco, a few kilometres towards the east of MCIA. The reasoning behind the government’s decision to site a new airport in Texcoco aligned with the common argument stressing an increasing demand in air travel while
minimizing costs and access times to users. The government’s logic was supported by a wave of discourses advocating modernization and infrastructure development to meet globalizing demands in Mexico. Moreover, the project was meant to become the grand achievement of the six-year term of former President Vicente Fox, who had promoted the potential airport as the new gateway to Latin America and a hub for international and domestic flights.

While the new airport was planned to meet the federal government’s vision of having a global airport, the decision failed to acknowledge local and regional impacts, particularly in terms of who was to benefit and who was to pay the costs. To develop the site, the government required the expropriation of 5400 hectares of ejidos that belonged to communities living in the Texcoco area. The government also needed to relocate thousands of families who had lived and worked for generations within the designated area, particularly those living in the municipality of Atenco. From the moment when the government announced its intention to build the new airport in Texcoco, a great share of communal farmers from Atenco expressed their total refusal to abandon their land. Regardless of such civil resistance, the federation gave the green light to the project and offered the farmers a modest compensation (approximately 0.70 USD/m²) for their land.

A strong social movement to resist the government’s expropriation order was then set off, which began with the creation of The Peoples’ Front in Defence of the Land or FPDT (Frente del Pueblo en Defensa de La Tierra). To counteract the government’s decision, the FPDT filed several legal charges to the expropriation order and organized multitudinous protest marches in Mexico City. A series of unfortunate events characterized by violent confrontations between FPDT activists and federal and state police forces followed, most notably on July 11, 2002, when the federal police attacked an FPDT activist march, injuring several farmers and capturing most of the group’s leaders. Immediately after, several thousands of inhabitants then obstructed a highway to Mexico City and captured state police officials. After a fragile standoff situation that was followed by negotiations to exchange hostages, the federal government decided to cancel the new airport project (Cuéllar and Venegas 2002).

The case explicitly demonstrates that the siting of new airports is prone to return negative effects, particularly when decisions do not follow precautionary planning schemes. Regardless of whether or not a new airport for Mexico City was required at the time, public officials and planners failed to understand a siting scenario characterized by complex dynamics between socio-economic, biophysical, political and cultural contexts. Reflecting on the government’s rationality behind the decision to site the new airport, Stolle-McAllister (2005) argues:

To Mexico’s leaders, therefore, it is logical that the state has the right and obligation to provide for the fulfilment of those needs and desires, even making decisions that may be painful to local residents who seem uninterested or unwilling to participate in the improvement of the nation’s future. They argue that, while unpleasant, some sacrifices must be made by a relatively small number of people (the several thousands who live and work on these lands) so that a great many more (the 100 million other Mexicans) will benefit from solidifying this essential link to global capital (25)
The case showed that the government’s growth interests clearly offset local and regional concerns about potential consequences and trade-offs. It was the farmers’ view that the government was only serving the interests of private developers and businesses at the expense of their own rights, livelihood and heritage. Such perceptions were neither contemplated during the proposal of siting choices nor throughout the 9-month period of land-use conflicts. The failure of making an adequate siting choice can also be attributed to the government’s lack of policy implementation in terms of redistribution. In this case, a cost–benefit analysis regarding the multiple impacts of siting alternatives would have been imperative, as suggested by Sobrino (2000) before the actual decision to site the airport in Texcoco was made:

The decision to be made by the federal government concerning the new airport (site) can be conceived as a redistribution policy since it will generate winners and losers. The determining factor associated with this type of policy is to establish expectations about redistribution and the social costs and benefits that will be generated. Hence, the assessment regarding the most appropriate site must be subjected to a cost-benefit analysis based upon two questions: a) the efficiency of the action with respect to the desired objectives; and b) the efficacy with regard to economic and social impacts (own translation).

Beyond cost–benefit analyses and understanding the need to create trade-off scenarios, research has also suggested that the process of siting controversial facilities could benefit from more precautionary policy mechanisms (e.g. Galland and McDaniels 2008), including public processes of negotiation (Kunreuther Fitzgerald, and Aarts 1993) and the need to promote and preserve regional planning as a socio-spatial project aimed inter alia at sectoral and inter-municipal coordination (Galland 2012). None of these processes seem to have been contemplated in this case. Complex cases such as siting a new airport in Texcoco could have additionally required the design and implementation of international regulations or other innovative forms of intervention established ad hoc by planners and decision-makers to balance objectives and prevent unfortunate outcomes. From a planning perspective, the challenge remains to shift away from the argument that only regards the increasing rate of aeromobilities from a national economic standpoint, towards a rationale that considers several alternatives in view of their social and environmental consequences and trade-offs. From a social justice perspective, it could be argued that mechanisms that regard multiple scenarios still need be developed to ensure that certain groups do not bear all the costs in situations where increasing aeromobilities only seem to benefit a privileged minority.

Furthermore, another important question in relation to the case of MCIA is the appraisal of other anti-airport protests in more industrialized countries and how they do or do not differ from the situation in Mexico. MCIA differs in a number of ways from the conflicts at Tokyo International Airport (Haneda Airport) and Heathrow Airport in the UK. In both cases there are ‘local resistance alliances’ at stake. In relation to Narita Airport, a resistance movement was formed in the 1960s between leftist student activists, left-wing political parties and local farms fighting for their land. The students activists believed that the real purpose of the new airport was to promote capitalism by providing facilities for US military aircraft during the Cold War with the Soviet Union, which linked up to the socialist movement at that time. The expansion of Heathrow particularly relates to what
can be termed as ‘global anti-aviation networks’. This is especially rooted in the UK with networks like ‘Plane Stupid’ and Airport Watch. Plane Stupid is a network of grassroots that take direct action against aviation expansion. The organization has occupied a number of airports in the UK, stopped private jets at UK airports and supported the Camp for Climate Action at Heathrow. Airport Watch is an umbrella network organization that focuses on government policies to expand aviation that could and should be resisted. It united a number of organizations concerned not just with the environment and works closely with the many community groups protesting about expansion at airports, and has links with similar bodies in Europe.

In relation to MCIA, there does not exist a relation between local interests and global ideology/ network in the same way. In this respect, there are more similarities between MCIA and conflicts around Boston Airport (land use), Copenhagen Airport Roskilde (noise), Berlin-Brandenburg International Airport (noise) where airports neighbours have been trying to fight against expansion in different ways.

**Conclusion and Perspectives**

The article has examined a number of consequences related to airport development and planning in relation to MCIA and its urban surroundings. The article has argued that a more multidisciplinary focus is required to widen the understanding of the existing relations between social, spatial and environmental consequences related to increased flying, airport development and globalization, instead of dealing with such elements individually. Therefore, throughout the analysis of MCIA, the article has shown a number of consequences, such as land-use conflicts, noise and health problems, air pollution and reduced urban quality. Here, one important point from the study is that the global airport is ‘differential’ (http://www.mobilities.ca) due to the locally produced patterns of immobilities, inequalities, exclusions and stratification (see Nielsen and Lassen 2012). This means that there is a great need for not only exploring implications of ‘politics at the airport’ (Salter 2008), but also studying problems with ‘politics and planning of airports’ in various urban contexts. In relation to this, there are especially three outputs from the study that we will highlight and put into perspective.

First, MCIA is an example of the backstage of the global corridors system of aeromobilities. At this backstage, there exist a number of serious problems as listed above. However, the study of MCIA has shown that it is somewhat complex to articulate local experiences with local noise and health problems, although it is more evident to link such local experiences with the reduction of urban space quality, liveability and local mobility patterns within and across surrounding areas due to the creation of new airport access infrastructure transecting these neighbourhoods. The analysis of MCIA shows how local knowledge and values tend to be neglected in order to promote global flow integration. In this case, the federal government of Mexico essentially reacted to the logic of globalization that emphasized the need to respond to increasing air-travel demand, while minimizing costs and access times for users. While a new airport was planned to meet the federal government’s vision of having a global airport, the decision failed to acknowledge local and regional socio-spatial and environmental impacts, and brought about a number of land-use conflicts with severe consequences. This also shows that airports cannot be understood separately from its social and material contexts. Airports are always socially
and materially situated, and thereby always tend to generate socio-spatial and environmental change (see the first section).

Second, the analysis of MCIA has also shown how national policies, planning, legislation and regulation tools are extensively designed for a much more stable world when it comes to coping with the consequences of places, cities and societies ‘on the move’ (Lash and Urry 1994). As pointed out above, the analysis of MCIA shows that the city, the region and the nation prioritize to be connected to the global corridor system of aeromobilities. Here, development and expansion of the MCIA is an important strategic element in the integration into the global economy (see also Lassen, Smink, and Jensen 2012 on airports as drivers for urban development). The study of MCIA has also shown, as other scholars have pointed out (see the first section in this article), that local players and airports are not just passively influenced by processes of globalization and aeromobilities, as these processes also disentangle a wide array of socio-spatial and environmental side-effects that depend on ad hoc local contexts. MCIA is an example of the tension and conflicts between various local, regional, national and global interests which has been described by Kesselring (see the first section). However, as this article has shown, methods and planning tools that integrate local-regional socio-spatial and environmental consequences for the groups of relatively immobile citizens who experience the consequences of the current global airport development (or plans for a new) are relatively weak (see also Elliott and Urry 2010). At the methodological level, there is, therefore, a strong need for development of new interdisciplinary methods in airport development and planning. Or as Cwerner, Kesselring, and Urry (2009) suggest, there is a need for a policy of urban aeromobility ‘where different claims and issues that were traditionally treated separately come together in an evolving governance of urban airspace’ (243).

Finally, the study of MCIA is an attempt to study the consequences of global airports and aeromobilities in rapidly industrializing settings. In this respect, the shown local-regional consequences also raise the question of sustainable development in relation to balancing the economic, social and environmental cost of increasing air travel and questions regarding how the whole global system of aeromobilities is regulated. As pointed out above, airports are nodes in a global network of travel, however, the consequences of MCIA (or similar places in such network) are invisible to the air traveller in Copenhagen or Tokyo (see the first section of this article). When evaluating the consequences of global airports, it could, therefore, be argued that the relation between developed and developing countries, as well as airports and urban surroundings, must play a much stronger role in further aeromobilities research. Here, Daley (2010) formulated a number of highly relevant critical questions, which are important when the total consequences of the global aeromobility system are assessed: who benefits from the provision of air transport services at local, regional, national, international and global scales?; who benefits from increasing capacity in the air transport system, and who loses?; does air transport bring about any reduction in the wealth gap between developed and developing countries? (189); which measurable direct and indirect social and environmental costs does air transport impose in developing countries? what measurable impacts does air transport have on human well-being in developing countries (197)? Such questions must be at the heart of the research agenda for further aeromobilities studies.

To conclude, this article is a first contribution towards embarking on a greater attempt towards generating a deeper understanding of the socio-spatial and environmental consequences of rising global air traffic. There exists a dire need to explore this area in an
interdisciplinary fashion, especially in order to establish an improved knowledge base for urban and regional planning as well as environmental policy in relation to handling the many spatial problems stemming from increased global air traffic and airport development.

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Notes

1. In this article, we regard the population of Greater Mexico City as the total amount of inhabitants that live within the political-administrative boundaries of the Metropolitan Zone of the Valley of Mexico (Zona Metropolitana del Valle de México).

2. Data regarding both passenger traffic and aircraft operations in MCIA were obtained from different official sources: (a) the General Directorate of Civil Aeronautics annual reports entitled La Aviación Mexicana en Cifras (Mexican Aviation Numbers), (b) the National Institute of Statistic and Geography (INEGI) ‘Anuario Estadístico del Distrito Federal’ (Statistical Yearbook of the Federal District) and (c) MCIA annual statistics. Some minor discrepancies exist with regard to retrieved data.

3. It has not been possible to access any recent official evidence regarding noise emissions in nearby districts. As the topic of the airport is generally a contentious issue in Mexico, we believe that authorities handle data with extreme caution by virtue of potential conflicting interests.

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