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GaWC Research Bulletin 251

A later version of this Research Bulletin has been published in [Progress in Human Geography](#), 31 (6) 2007, 773-791, under the title 'Flying Lessons: Exploring the Social and Cultural Geographies of Global Air Travel'

doi:[10.1177/0309132507083508](https://doi.org/10.1177/0309132507083508)

Please refer to the published version when quoting the paper.

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Air Space: Towards a Social and Cultural Geography of Global Air Travel

P. Adey*, L. Budd** and P. Hubbard**

Abstract

Geographic research into commercial aviation has traditionally been undertaken within the field of transport geography. While such studies have shed light on the increasingly complex morphology of global air routes, this paper argues such approaches often downplay crucial questions concerning the social production and consumption of different spaces of air travel. Drawing on ideas from the newly-emergent 'mobilities' paradigm, this paper identifies some alternative geographies of air travel, arguing that socially- and culturally-inflected perspectives may help reveal the iniquitous imprints of global air travel at a variety of spatial scales. We suggest that there is much to be gained by adopting such perspectives, and argue that work on the social dimensions of air travel is vital in a discipline where air transport is routinely described as an enabler of globalisation, yet is often treated as an abstract, and oddly disembodied, space of flows.

INTRODUCTION

Within a discipline where space-time convergence and the associated distancing of social life are considered to be the defining characteristics of globalization, successive innovations in information and transport technology are routinely depicted as making the world seem a smaller place (Knowles 2006). Over the last century, geographers (and others) have repeatedly identified commercial air travel's pivotal role in allowing the construction of an increasingly thick network of flows that envelops the earth's surface, but have stressed that these services link different places together in a highly uneven manner. Analyses of passenger figures reveal that individual cities are bound into global networks of air travel with varying degrees of centrality and peripherality, with the global world city status of London, New York, Tokyo, Singapore, Amsterdam, Frankfurt and Paris reflected and reinforced by measures of their global air connectivity (Smith and Timberlake, 1995). Other large cities, meanwhile, appear as 'holes' in the system of world air cities, only loosely connected into the

global airline system and therefore requiring considerable time and expense to reach from elsewhere (Short 2004; Zook and Brunn 2006).

Increasingly sophisticated cartographic methods have enabled geographers to visualise these uneven networks of air traffic, with data on passenger and freight traffic used to reveal the scale and scope of the global air transport network (see Cattan 1995; Smith and Timberlake 1995, 2002; Bowen 2002; Burghouwt *et al* 2003; Derudder *et al* 2004; Witlox *et al* 2004; Zook and Brunn 2006 amongst others). Alongside work on airport development, such research – particularly on the evolution of hub-and-spoke air transport networks (O'Kelly 1998) – is identified by Vowles (2006) as representing a major strand in the geographical literature on air transportation. The emergence of new markets in East Asia and the Middle East will also demand new mappings of global airspace, as will the proliferation of global airline alliances that extend the global networks of hitherto national carriers. While such maps would shed light on the unfolding networks of air transportation, Vowles (2006) neglects to consider the equally significant ways that geographers could (and do) contribute to an understanding of air transportation as being socially-produced and consumed.

Moving beyond work grounded in the quantitative traditions of transport geography, this paper emphasises the existence of some alternative geographies of global air travel. Our intention here is to explore the social and cultural geographies of *aeromobility* – a term we use to describe the dominance of flying as a normal mode of international travel (in much the same way that automobility refers to the dominance of the motor car as a means of personal transport – see Beckmann 2001). By suggesting air travel involves a complex enfolding of the social and technical, we argue for a socially- and culturally- inflected interpretation of air transportation which examines the way that flying has become established as an unavoidable transport of 'delight and despair' (Urry 2001). Cutting across the different landscapes of aeromobility from the airport to the airway, we argue that the spaces of air travel are not some asocial realm or 'non-place', but spaces whose embodied, emotional and practised geographies have yet to be adequately charted. We begin, therefore, by noting the rise of a putative 'mobilities' paradigm that has started to alert geographers to the potential overlaps between transport geographies and social-cultural research.

AIR TRANSPORT AND THE 'MOBILITIES' PARADIGM

In his recent overview of the geographies of mobility, Cresswell (2006) considers the metaphysics of movement in Western social thought, arguing that sedentarist suspicion about mobility is being superseded by a new nomadic worldview in which mobility is seen to be the norm, not the exception. Mirroring this, it has been widely-argued that social scientists' traditional preoccupation with the fixed and sedentary needs to be replaced with a concern for the mobile and fluid. Zygmunt Bauman (2000), for example, writes of *liquidity* as the defining characteristic of contemporary society: liquids may not bind or unite, but are extraordinarily mobile. These flows ooze, seep and flow around the world, often spilling over the 'dams' and 'defences' designed to impede their progress (such as immigration controls and border tariffs). The use of hydraulic metaphors implies a need for theories able to make sense of these new 'geographies of flow': from Massey's (1993) 'progressive sense of place' to Castells' (1996) space of flows, geography is now replete with theories attuned to the extraordinary levels of mobility – or hypermobility – which characterise the contemporary world (Shields 1996).

Given the increased attention given to questions of movement, Urry (2004, 4) argues 'there is a 'mobility turn' spreading into and transforming the social sciences'. By definition, this turn represents an instant in which the dichotomy between transport research and social research is being problematised, with increased attention given to the way social ties are shaped by (and shape) networks which transmit flows of goods, people, ideas and money. Accordingly, Urry refers to a 'new mobilities paradigm' which brings scalar claims into question, going beyond an imaginary which regards territories or identities as spatially-fixed and bounded (see also Hannam *et al* 2006; Urry and Sheller 2006; Dival and Revill 2005). Regarding each and every place as tied into 'at least thin networks of connections that stretch beyond each such place' (Urry and Sheller 2006, 210), the implications of this paradigm are apparent in many different aspects of research into transportation and movement, with, for example, the automobile increasingly examined not just as a technology for moving people from A to B, but as an active agent in the making of new social practices, formations and spaces (Beckmann 2001; Thrift 2004a; Merriman 2005).

Following other commentators in arguing that social scientists have tended to focus on the sedentary and fixed, Urry hence presents an argument for exploring the imbrication of culture and technology in practices of movement. An important dimension of this is granting due recognition to the role of computer software (*code*) in enabling and maintaining flow, noting that social systems and technology co-evolve to the extent that everyday mobility becomes dependent on a panoply of embedded technologies and software routines (Dodge and Kitchin 2005a, 2005b, Graham 2005, Thrift and French 2002). Nowhere is this more evident than in modern aircraft and Air Traffic Control centres that mediate air travel. Graham (1998b) estimated that it takes 50,000 electronic exchanges to get a B747 airborne; an Airbus A320 is powered by 94 separate computers (Laming 2000), and Boeing's 777 has over 2.6 million lines of software code incorporated into its avionics and entertainment systems (Norris and Wagner 1996). Similarly, the UK 's National En-Route Air Traffic Control facility in Hampshire uses over two million lines of software code to support 3300 functions, 23 subsystems and over 200 workstations (NATS 2005).

Taking their cue from Urry (2003) and Castells (1996), Dodge and Kitchin have explored how specialist computer software mediates the production of aviation 'code/spaces', from check-in counters, security checkpoints, departure lounges and aircraft cabins, to baggage reclaim and retail areas. The central tenet of the 'code/space' thesis suggests these spaces are qualitatively different from the more familiar 'coded spaces' of the built environment. Unlike in a 'coded space', when the technology producing a 'code/space' fails, there are no alternatives, as manual methods cannot perform the role of the failed systems as efficiently or safely. In this situation, a software failure leads to a complete 'breakdown' of the space, as it cannot function as intended. The consequences may range from mild inconvenience to utter catastrophe, and mostly manifest themselves when a flight is delayed or when baggage is misrouted (see Clark 2004, Clement 2004).

However, while geographers are beginning to consider the technically-infused production of airspace, there remains more that could – and should – be said about the relations between these technologies and the social practices which animate them. After all, code only produces airspace through its incorporation in an aeromobile assemblage that includes crew, air traffic controllers, ground crew, airport managers, passengers – as well as numerous other forms of 'software' and 'hardware' (Peters 2006). Pilots now rely on a plethora of digital instruments and electronic sensors, including flight management computers, artificial horizons, internal reference systems, radios, data links, 'fly-by-wire' controls, traffic alert and collision-avoidance systems (TCAS), and individual aircraft are fitted with integrated internal pneumatic, hydraulic, and fuel systems and connected to external networks of global positioning satellites, air traffic control computers and ground-based navigation beacons - as well as computers on other aircraft - creating complex 'networks within networks'. Although it is possible to argue these assemblages are less and less mediated by human discretion, research stresses that code does not *determine* the contours of global airspace. Rather, airspace is continually 'beckoned' into being through the generative relationship of technology and human practice (Dodge and Kitchin 2005b), with, for example, flightdeck displays needing to be interpreted and acted upon by skilled flight crew (Norris 1981, Beaty 1991, Cushing 1994, Faith 1996).

Urry's insistence that social scientists move beyond descriptions of flows to detail the social and technical practices which produce them is highly relevant to studies of aeromobility. Stressing that mobility is not just about things and people moving *between* fixed places, Urry (2003) makes a case for addressing the complex networks linking the immobile and mobile (e.g. the connections between air travel and the infrastructure of airports, navigation beacons and air traffic control). Focusing on the interplay of the distributed agencies and technologies involved in the production of airspace, studies exploring the embedment of technology in social systems thus offer considerable potential for prising open the 'black box' of air transportation. Yet, as Beckmann (2001) notes in the context of automobility, neither noting the expansive nature of technological systems or the social construction of technology itself is sufficient for revealing the social dimensions of mobility. For example, and in relation to aeromobility, there is also a pressing need to explore how flying has become a routine mode of transport for many of the world's population. In part, one can view the plane as an *enabler* that has allowed four million air passenger movements to be made each day, yet this does not explain why so many trips are made, or why air travel has become ubiquitous in the conduct of international long-distance work. Indeed, Lassen (2006) contends it is increasingly difficult to identify who flies because they have to and who flies simply because they can. The fact air travel has become normalized, and continues to be associated with all number of bodily pleasures and excitements – as well as anxieties - suggests aeromobility demands to be theorised as a complex set of social

representations, imaginations and practices as much as the outcome of technological advances. In the following sections, we thus consider three different ways it might be possible to elicit the geographies of air transportation, with a specific focus on the ways aeromobility is reconfiguring (global) social space.

IMAGINING AND INHABITING GLOBAL AIRSPACE

'The airplane', declared the French aviator and author Antoine du Saint-Exupéry (1939, 57) 'has unveiled for us the true face of the earth'. Whilst the precise nature of what constitutes the earth's 'true face' is eminently questionable, geographers have certainly hinted at the ways air travel has ushered in new ways of conceiving of the world. Despite an evidential lack of work on the visceral geographies of flying, there is a substantial body of work considering the visual pleasures associated with 'seeing from above', emphasising the way air travel is implicated in certain cartographic and geopolitical imaginations. For example, Fleming (1984) explores the world of airline advertising, which, as Cosgrove (1994) also reveals, relies upon highly-seductive projections of the world. As both writers appreciate, the cartographic equivalent of 'artistic license' is often employed in an effort to communicate the 'worldliness' and prestige of an airline's all-encompassing route network. As Wood observes:

'Delta's Domestic Route Map, that is, the United States, and parts of Canada, Mexico and the Caribbean...[is] all but obscured beneath a thick weave of blue lines symbolising not merely Delta's routes, but the *embarrassing abundance* of Delta's routes. What does the map say? It says 'we blanket America', that is, 'we will keep you so warm you will never want to go to bed with another carrier'... The point is merely to dissuade you – through the exploitation of age-old rhetorical devices (emphasis, exaggeration, suppression, metaphor) – from thinking of American or TWA or USAir next time you want to fly' (Wood 1993, 73 original emphasis).

Cosgrove argues such images have also been used to manipulate an individual's understanding of their place in the world by invoking visions of global citizenship. In the United States especially, it was hoped such projections would help overcome 'American isolationism and provincialism' and induce understanding of 'the consequences of the daily shrinking process of time and space on our globe' (Cosgrove 1994, 281). Though working from a background in sociolinguistics, Thurlow and Jaworski (2003, 579) similarly report the use of 'metonymic repertoires' of world cities, cosmopolitan lifestyles and designer goods in in-flight magazines reinforces a discourse of globality that espouses the alleged benefits of a mobile (i.e. 'western' or capitalist) identity. In a different context, Pirie (2003) suggests the reporting of British imperial aviation events during the 1920s and 1930s became both a matter of both factual record and nationalistic propaganda, informing public understandings about Empire while engendering enthusiasm for the colonial project. Given the wealth of surviving archival data from these 'golden years' of aviation, it is egregious that geographers have thus far neglected their significance.

Continuing this theme, geographers have not limited their investigations to considering representations or advertising produced by the air transport industry, but have also noted the 'ways of seeing' which air travel has facilitated. Daniels and Rycroft (1993) hence note the view from the aeroplane fundamentally altered people's feelings of Self and Other. Here, questions of power and pleasure entwine, with the pursuit of totalising visions of the world encouraging the powerful to survey and map landscapes from the air, from the earliest surveys by balloons to the use of satellite imagery in 'precision' bombing (Hewitt 1994, Vidler 2002). Such aerial perspectives have been favoured as they facilitate a mode of representation which 'unifies' the disparate elements of landscape, presenting it as a totality which can be easily and immediately comprehended (and, by implication, ordered) (Scott 1998).

The ability to overfly landscapes - viewing them from afar and above - has hence been thought of as one of the best ways of comprehending space. Reminiscent of Saint-Exupéry, J B Jackson postured that it was only from the aeroplane that the relationship between people and the landscape could be truly understood. For Jackson, the aerial view was an image 'which stirs us not only because of its beauty and vastness but because of its meaning' (Jackson in Langewiesche 1998, 31). And yet, the aeromobile gaze inevitably has its blindness and occlusions, and ignores many vital aspects of the lived and practised landscape - a concern that De Certeau (1984) likewise elaborated in his

celebrated account of the view from the top of the World Trade Center. As Benjamin (1985, 50) stressed: 'the airline passenger sees only how the road pushes through the landscape, how it unfolds according to the same laws as the terrain surrounding it: only he who walks the road on foot learns of the power it commands.'

There are hence important questions to be asked about the way that flying has encouraged particular ways of seeing and conceiving of the world. Utilising the route guides Imperial Airways published in the mid-1930s to enliven air journeys by supplying passengers with cartographic, pictorial, and written commentaries about the physical and cultural landscape they overflew, Budd (2006a) has hence begun to explore the implications of this new 'view from above' in changing geographical imaginations. Indeed, to facilitate the aerial recognition of features deemed interesting or culturally significant, Imperial Airways installed a 'promenade deck' in their long-distance Empire flying boats, and provided binoculars to encourage passengers to gaze out of the window (Lovegrove 2000). As technological developments enabled aircraft to fly progressively higher and faster, it has been contended that passengers lost their attachment to 'terrestrial' space, leading Borgstrom (1974, 317) to complain that during flight 'passengers are suspended aloft while the geographic spaces of origins and destinations are rearranged below'. Nevertheless, the ability to see the curvature of the earth from six miles up has arguably promoted new notions of international citizenship, with in-flight displays showing flights progressing through a borderless world measured in terms of speed-distance rather than national jurisdictions or airspaces. Such maps, for Govil (2005, 247), provide reassurance of a 'world cleansed'; they represent a 'pastoral topography untouched by the vagaries of geopolitical conflict, industrial waste and environmental blight'.

The idea that aeromobility promotes 'a new post-world order' (Borgstrom 1974) is one that demands further scrutiny. Important here is the idea that when flying, we are taken out of national space and time and positioned in a *placeless place* and *timeless time* (Castells 1996). Against this, of course, we might argue the experience of flying remains highly variegated, for the 'world of transit doesn't operate at the same velocity, or in the same mode, in every place' (Fuller 2003, 3). Arguably such inequalities are, in part, a product of carriers whose identities (and commercial fortunes) are directly bound up in senses of national identity. Raguraman (1997) affirms that airlines have operated as 'instruments' of nation building, becoming symbolic projectors of both nationalistic propaganda and, on occasion, imperial power. Further, as Simmons and Caruana (2001) demonstrate, airports and aerodromes are often similarly inscribed with national and local identities. Using the example of Manchester's Ringway Airport, opened in 1938, they demonstrate airports engender considerable civic pride and are hence objects of municipal peacockery. Humphreys (1999) and Humphreys and Francis (2002) likewise suggest the local authority ownership of many UK airports encouraged their civic-minded owners to develop airports as objects of regional prestige. In the East Midlands, the Joint Airport Committee firmly subscribed to the belief local airports provided an opportunity to project the aspirations and identity of the East Midlands onto the national and international stage (Metcalf 1972). Furthermore, citizens demanded to fly from their own airport, as cultural and discursive formations of 'airmindedness' encouraged them to believe that if their city did not have an airport, it was surely disconnected from the modern world (Adey, 2006a). Old city rivalries were hence invoked in airport development programmes, a phenomenon especially pronounced in the case of Manchester and Liverpool airports in the North West of England, where each city vied for the most successful and modern aerodrome.

Continuing this theme, Cosgrove (1999) notes contemporary airports are replete with representations of local identities and cultures, both to remind visitors where they are, and to theme these apparently placeless places. Such people/place-based identities are consumed within these sites through pens, mugs, trinkets, airport magazines, and other memorabilia, all of which bear the airport's corporate insignia. UK airports have enthusiastically embraced this trend, variously renaming and/or re-branding themselves in an attempt to emphasise their 'localness'. Thus Liverpool became 'Liverpool John Lennon', Belfast City, 'George Best International', while former RAF Finningley is now known as 'Robin Hood Doncaster-Sheffield'. Such 'reincarnations' have not been without incident, and perhaps the most controversial was the decision to prefix East Midlands Airport (in northwest Leicestershire) with 'Nottingham' in early 2004, in the hope of stimulating inbound tourism (Walker 2005).

Such perspectives on the place identities of airports challenge the oft-made proposition that airports are emblematic 'non-places' (Gottdiener 2001; Pascoe 2001; Lloyd 2003; Wood 2003). The term,

famously coined by Marc Augé (1995), captures the sense in which airports need to be considered as a kind of placeless space; a diaphanous site that has been bleached of social significance through the condition of supermodernity. For Augé, the contemporary world is characterised by a global esperanto of signs, symbols and instructions that script relationships between people and place. The international airport, replete with global chainstores, similarly-dressed business travellers and security-scapes is thus cited as a (global) social space where social interaction adheres to a global standard of civility and inaction. The spaces of the departure lounge and arrival hall, in particular, are written in parallel with the fast-food restaurant, retail mall and multiplex cinema as symptomatic sites where place has been sacrificed in the name of mobility; a prime example of the 'world of places' being replaced by 'spaces of flow' (Castells 1996). As Iyer (2000, 43) notes of Los Angeles International, 'A modern airport is based on the assumption that that everyone's from somewhere else, and so in need of something he [sic] can recognize to make him feel at home' thus, air travellers are 'surrounded by the familiar totems of *The Body Shop*, *The Nature Company* ...the impersonal successors to family names of old'.

Moving well beyond the myopic perspectives espoused by Augé and others, several commentators have nonetheless examined the multiple ways in which airports are inhabited. Merriman (2004, 152), in particular, takes issue with accounts that posit airports as bereft of sociality, arguing 'frequent flyers, baggage handlers, flight crews, first-time flyers, first class passengers, refugees, air traffic controllers, police officers and the homeless are likely to have very different experiences of movement, dwelling, security, familiarity and belonging in these places'. Underlining Merriman's (2004) arguments about the differentiated experiences of airspace, Cresswell (2006) also provides numerous vignettes of the social rituals played out in airports, noting these spaces provide a focus for some forms of sociality that have little to do with air transport *per se*. Schiphol Airport, Amsterdam, is thus represented as one of the city's important meeting places, a gathering place for a number of 'local' and 'international' tribes (including, on occasion, academic conference travellers).

It is thus important to realise that different airspaces may produce particular emotional attachments for travellers and workers. The 'placeless' realm of the airport, for example, may be variously experienced as exciting, banal, stressful, overcrowded, disorganised, regimented, thrilling or soporific, triggering a remarkably diversified range of inhabitation:

'Airports would be rather mundane places if they were not populated by swarms of passengers...[who] wait in front of counters, sit in restaurants and lounges, make their way to the boarding gates...Others take a look round, stroll, are relaxed, indeed almost euphoric, they shop, consume, find time for all kinds of activities. Latecomers are in a rush, they panic at security controls then continue to hurry along until they reach the safety of their seat in the aircraft cabin and can finally relax. One can also see loneliness at airports, only a few steps aside from the streams of humanity, the pain of leaving, the joy of arriving, as well as boredom and ill-humour. Airports without people are like an empty stage' (Hackelsberger 2004, 26).

Iyer (2000, 44) also remarks that airports may be the scene for 'the most emotional moments in our public lives', where our 'intimate encounters...are played out in a maze of...shops...public address announcements and crowds...' As such, there seems much that needs to be said about the way that an apparently global technical system bequeaths locally variegated and meaningful spaces – and conversely, how the local specificity of airspace normalizes a globally dominant aviation system.

UNEVEN GLOBAL AEROMOBILITIES

Viewing air transport through the lens of cultural and social theory clearly alerts us to some of the key issues of power and identity that adhere to airspace. Indeed, in the current epoch, it has been argued the air transport industry provides one of the most highly visible articulations of power; for example, contemporary airspaces are highly ordered, with a clear separation of travellers into business/economy classes. Moreover, passengers are screened, scrutinised and sorted at every phase of the journey, and some may be subject to intrusive surveillance:

'The airport exposes people to what the average Westerner regards as either a nuisance or a reassurance – drug-sniffing dogs, X-ray machines, metal detectors, mandatory searches, restrictions

on movement, security inspections, and intense screening. Staring customs officers, sharp questioning, bio-identifiers, computerized facial recognition and other technological marvels are meant to produce an environment in which people's intentions are 'revealed' and suspicious behaviour is recognized' (Aaltola 2005, 263).

As Aaltola argues, the international airport is a place where all manner of social types are created and classified, and where 'terrorists, suspect Arabs, Third-Worlders, different ethnicities and illegal immigrants' may be subject to intensive scrutiny. The airport is thus a place of constant surveillance, with signs and recorded announcements reiterating we are being perpetually watched and classified. Post 9/11, passengers are frisked and ordered to remove outer clothing and shoes in front of security staff and fellow passengers at search areas, while screeners unceremoniously rifle through their possessions. Following an alleged terrorist plot to blow up passenger aircraft mid-Atlantic in August 2006, this security-sorting increased in intensity, with all hand luggage banned and essential items transferred to clear polythene bags, rendering prescribed medication and sanitary products on public display (Lewis 2006). Such humiliation and indignity, while exceptional, arguably reveals the extent to which passengers have become subordinated to a global system of surveillance in which fear is used as a psychological tool of compliance. Gary T. Mark (2005) for instance, urges us to consider how 'border crossing tools...rely on extending or constricting the senses', channeling sensory stimuli, in order to sift and sort specific feelings and emotions. By attending to the body's corporal and emotional state, a ir transport becomes an uneven intensifier of affects and sensations that are inseparable from relations of surveillance and control (Thrift, 2004b).

In this sense, the airport can be presented as a microcosm of wider society, with the diffuse forms of surveillance existing in public urban spaces taking intense form in a space explicitly designed to prevent *unauthorised* passage and mobility (Morgan and Pritchard 2006). Post 9/11 strategies of border control (or what Andreas 2003, 79 terms 'rebordering') have focused explicitly on airspace, with carrier sanctions effectively ensuring that flight check-in procedures are as much a part of migration control as are customs and police checks. For Walters (2006), the imposition of borders at the airport is less and less about commercial regulation or even military security, and more and more about instruments for the policing of a variety of actors and objects pathologised by their deviant mobilities. Unlike the airport of the past, which Walters suggests may have been a point of arrival, reception and integration for migrants (i.e. the gateway to a nation), the airport is now merely one node within a series of sorting points.

The extent to which the airport stands at the apex of systems of social control is being widely explored, not least by geographers (Adey 2004a; 2004b; Kitchin and Dodge 2004). As well as exploring issues of border control, these authors have questioned how airport surveillance systems actively conspire to affect people's life chances by reproducing inequalities and differences based on class, race and religious identity (Adey 2004; 2004b). Graham's work, in particular, exposes airport security as yet another mechanism by which the world is becoming increasingly *splintered* between the spaces of the kinetic elites who buy and enjoy unparalleled access to services and transport, and those who cannot afford to or are disqualified from using them (Graham and Marvin, 2001; Graham 1998a; forthcoming). In the context of airport security, these trends are manifest in programs that employ biometric technologies to allow those who are picked, and 'privileged' enough to afford it, to enjoy speed of access and service within the terminal (Taylor 2004). Curry (2004) accordingly investigates the way systems such as Computer Assisted Passenger Pre-screening (CAPPS) have been utilised by airlines in the US to identify passengers suspected to be of greater risk than others. For Curry (2004, 489), such systems are underpinned by specific narratives concerning identity and belonging so that 'a set of possible stories of treacherous acts' are woven into the assumptions of such systems. Specific groups of signifying characteristics hence become tied to particular ideas of who and what is a threat. These assumptions, according to Curry, serve to reproduce themselves upon the life-chances and mobilities of those they are modelled upon – becoming self-fulfilling prophecies.

The arguments here about surveillance and society are complex, and it might be countered that securitisation, surveillance and sorting are endemic features of contemporary capitalist societies, and not just evident in airspace. Yet some have argued that surveillance technologies are most intensely deployed in airspace, rippling out to encompass other social spheres over time through processes of 'surveillance creep'. For example, surveillance author Lyon (2003) argues the ethos of the

'technological fix' is ingrained in the aviation industry to the extent that technology is normatively assumed to be able to resolve any security problem. As he shows, there are enormous commercial pressures currently in play here, driving carriers to invest in the most secure technologies. But he suggests this imperative to invest in new surveillance technologies extends backwards to the original myth of the aircraft as the 'winged gospel' - a technological panacea to the world's problems (Corn 1983).

Yet there is also plentiful evidence to suggest that surveillance is not merely *intensified* within airspace, but is deployed in ways that fundamentally *invert* normal notions of citizenship and sovereignty (with Fuller, 2003, comparing the airport to Agamben's description of the camp). As such, the deployment of surveillance within contemporary airspace has been read as predictive of imminent societal changes, with the encompassing forms of surveillance evident in airspace rippling out to encompass a wider range of social spaces. Amoore (2006) goes as far to suggest that the identity ascribed at the airport is carried with one throughout life. Using the example of the Brazilian mistakenly shot by police on the London Underground in the aftermath of '7-7', Amoore (2006, 338) demonstrates that a contemporary state of exception has meant that the body becomes the 'carrier of the border' - a place 'inscribed with multiple encoded boundaries of access'. The exceptional space of the airport, in effect, is made mobile, bringing to the fore what Mark Salter (2006, 165) describes as a new kind of corporeal and confessionary regime where the body 'comes to testify or confess for the subject without consent or perhaps knowledge'.

Though only briefly commenting on surveillance *per se*, Crang (2002) also stresses the social inequalities and class differences evident in airspace - something that geographers have not always been quick to highlight. For example, in David Linton's 1946 speech to the Geographical Association he stated: 'the air view of the ground ... has become a familiar thing to us all' (cited in Daniels and Rycroft, 1993, 465), indicating that air transport has often been taken for granted by geographers, effacing the unequal access to this form of mobility. Against this, Crang posits that airports are the domains of the privileged, buildings constructed to serve the needs of the most frequent flyers - transnational businessmen, professionals and members of the putative 'creative class'. Thus, in stark contrast to the 'wretched test of endurance' of economy and low-cost travel, 'typified by delays, crowds, the flatulence of your fellow passengers and the cold, hard stares of cabin crew' (Duerden 2006, 24), business and executive business class travel offers passengers enhanced standards of service and mobility. Lassen (2006, 309) hence argues that business travellers are 'easily able to traverse airports and international boundaries.' For the truly super-rich, fractional jet ownership and charter schemes enable wealthy travellers to bypass check in queues and air traffic delays while buying privacy, prestige, and the flexibility to choreograph flight arrangements to personal schedules (Beaverstock *et al* 2004 ; Maslen 2004).

From this perspective, air transportation provides an example of how society is divided in terms of mobility, with the business/economy divide increasingly mirrored in the different levels of service offered by low-cost and full-service carriers. The characteristics common to the majority of low cost airlines include high aircraft utilisation, Internet booking, minimum cabin crew, more seats per aircraft than traditional airlines, short 'on the ground' turnaround times, no seat allocation, and limited catering (Francis *et al*, 2006). Low cost airlines generally serve cheaper, less congested secondary airports that are located within the subordinate city region of major World Cities, including Stansted (London) and Hahn (Frankfurt). The development of a homogenised, streamlined, reduced-service airline product thus offers a lower-priced alternative to full service carriers, with operators targeting the 'mass market' by piling capacity onto a small number of routes, allowing them to drive down operating costs and offer lower fares. But even though low-cost carriers are sold on the idea of democratising air travel, the availability of low cost services remains highly uneven, and even in Europe, it only accounts for 18% of all flights (Dubruszkes 2006). Moreover, a Civil Aviation Authority (2004) survey of 180,000 passengers at UK airports revealed that passengers at Stansted (London's low-cost 'hub') had average incomes over £50,000; social classes D and E, while comprising 27% of the UK population, made only 6% of the flights. Further, half the UK population has never flown, and a further 25% have flown only once (Clement 2006). Rather than bringing frequent flying to the masses, it appears low-cost airlines have increased the frequency of flying amongst the more affluent.

Accordingly, Sparke (2006) suggests inequitable aeromobilities provide the springboard from which to explore important contemporary issues of uneven mobility. Significant here is the contrast between

frequent flyers and an under-privileged 'kinetic underclass' subject to intensive forms of security control, both within and beyond the airport:

'Club-class passengers still move with significant speed in the comfy cosmopolitan circuits created by international conference trips, international tourism and international family get-togethers. For the world's working classes and for those subject to 'security risk' codification, by contrast, being in the kinetic underclass has altogether more oppressive and more unpredictable outcomes including, not least of all, much more volatile mixes of movement and immobility. The experience of immobility in these cases means something entirely different to the petty class resentments that come with seeing business suits and Lexus cars speed by in NEXUS lanes' (Sparke 2006, 169).

For Sparke, air transport provides one of the most terrifying forms of exclusion while acting, simultaneously, as the very means of travel accorded to business elites (the 'kinetic class'). Breaking down the assumption that speed necessarily equals wealth and freedom, Sparke suggests the deportation of suspected terrorists by extraordinary rendition for 'torture by proxy' in countries with questionable human rights records is an extreme example of the 'expedited exclusion' that is primarily – though not exclusively - associated with aeromobility (Sparke 2006, 151). More than just a reflection of social divides, this example illustrates that air transport is deeply-implicated in the making of global social orders, and is 'intricately tied to relations of power and domination that both produce and shape forms of mobility' (Lassen 2006, 309).

CONTESTING GLOBAL AEROMOBILITY

One of the most widely-noted characteristics of air transport is its inexorable expansion. Despite occasional 'scares' (such as the threat of global terrorism or communicable diseases like SARS) denting passenger numbers, the number of flights is increasing year-on-year, creating new demand for airports, runways and air routes. While members of the kinetic underclass might have reason to oppose this process of expansion, May and Hill (2006, 438) note that 'global aviation futures are...being increasingly contested at the local level' by those apparently concerned with the environmental impacts (rather than the social costs) of air travel. One notable phenomenon is the widespread occurrence of NIMBY-style campaigns of opposition to new airspaces. For example, the proposals contained in UK Department for Transport's (2003) 'Future of Air Transport' white paper prompted the formation of several local pressure groups to counter specific threats. By definition, NIMBY campaigns against airspace expansion are based on the belief that a particular facility, while perhaps necessary, could be better located elsewhere. However, the specific nuance of this argument varies from place to place, with campaigners citing a variety of reasons why airspace expansion is inappropriate in their locality. On occasion, protestors will emphasise the potentially deleterious impact of a development on their house prices, and emphasise the issues of blight that might be associated with living alongside airport facilities (which are often regarded as unsightly) (May and Hill 2006). More often, however, attention is drawn to the potentially negative impacts of an airport on the surrounding community's health and well-being, whether these are related to its initial construction or its day-to-day operation. A common rhetorical strategy is to emphasise the risk airports pose to children, who are frequently portrayed as 'innocent' parties caught up in a conflict not of their making. The idea that aircraft noise prevents children sleeping or studying properly is thus a widespread trope in the rhetoric of protestors, with concerns that aircraft pollution may cause physical and mental health problems frequently cited (Hume and Watson 2003; Banatvala 2004). Further, it is often contended that, irrespective of the *quantity* of noise created, air transport creates unique soundscapes which are often highly disturbing, their sonic geographies being given meaning in the subjective and emotional realms of everyday life (Smith 2000). 'The distinctive roar and high-pitched whine of jet airliners landing and taking off...[is] a peculiarly oppressive sound that has to be lived with to be truly resented' (Pearman 1973, 23)

Hence, while protestors typically acknowledge the demand for flying, and concede airports 'have to go somewhere', they reject the idea their community should bear the brunt (Griggs and Howarth 2004). In the face of such public hostility, politicians and planners typically emphasise the scientific rationality and progressive nature of their proposals and, since science and technology are accorded a higher status in legal, political and media arenas than public opinion, proposals are rarely rejected (Hansen 1991). This tendency for 'national interest' to prevail over local concerns demonstrates a lingering form of political universalism, which Owens (2004) believes is responsible for generating local hostility

towards, and decreasing confidence in, the democratic planning process. Lidskog (2001) thus argues such conflicts reveal a fundamental and often mutually incompatible tension between national priorities and local amenity interests. André (2004, 50-51) likewise characterises NIMBY protests as underpinned by mistrust, referring to the expansion of Boston Massport, where campaigners felt they were never told the 'full story' by the authorities:

'First, there may be a runway extension, then a new terminal building, then a new control tower and, before the citizenry is aroused, suddenly there is a major airport in their backyard and, given the cumulative investment in infrastructure, there is no turning back...It is one thing to buy into a community knowing that you are going to live near a busy commercial airport...[*but*] another thing to be surprised by the transformation of that modest general aviation facility into a potential La Guardia' (André 2004, 43-51).

The belief that normal channels of opposition are generally ineffectual in preventing airspace expansion has hence encouraged some NIMBY protestors to pursue forms of direct action, bringing together those who are opposed to development in a specific locale with those opposed to development in general. In the context of the controversy surrounding the decision to construct a second runway at Manchester Airport, Griggs *et al* (1998) show how, as the legal avenues through which local residents could challenge the proposals were gradually exhausted, the 'Coalition Against Runway 2' (CAR2) campaign enlisted the help of a group of 'radical' serial protesters. At the height of the protest, 80 eco-activists occupied six camps adjacent to the A538 Wilmslow to Manchester road, living in tunnels under the runway site and locking themselves to concrete blocks suspended in the tree canopy to resist eviction. These camps, comprising a collection of tents and tree walkways, constructed in haste in the path of the construction workers, famously became home to a group of self-styled eco-warriors who campaigned alongside local residents (Farrell 1997).

Airport anti-expansion movements thus often involve complex actor-network spaces with national as well as local dimensions. Of course, community opposition to the siting or expansion of locally unwanted land uses are not solely confined to objecting to transport developments, and studies of opposition to airspace expansion draw parallels with geographic debates surrounding the location of quarries (Anderson 2004), landfill sites (Heiman 1990), mobile telephone masts (Walton 2002), asylum reception centres (Hubbard 2005) and windfarms (Woods 2003). A key theme throughout this literature is that NIMBYism inevitably arises from the 'constant spatial mismatch between the geography homeowners want and the geography they actually experience' (Purcell 2001, 78). The suggestion here is that NIMBY campaigners are motivated by a self-interested desire to protect their financial and emotional investment by opposing developments that threaten the value of their home. In this regard, it is interesting to note that many instances of opposition to airspace expansion occur in rural locales, where overflying is often depicted as a transgression of rural tranquillity. The DEMAND group who opposed the rerouting of flightpaths over villages in East Leicestershire has argued aircraft noise is wholly inconsistent with their perception of a rural idyll, with campaigners expressing dismay that 'the noise of the city' has followed them to the countryside (Budd 2006b). Likewise, the Stop Stansted Expansion group have framed themselves as self-appointed custodians of the Essex countryside, highlighting the possible ecological effects of expansion on Hatfield Forest, the 'rape' of the countryside, and destruction of 54 listed buildings, 200 homes and two ancient monuments (Akbar 2003). In both cases, campaigners have made reference to the Council for Protection of Rural England report which calculated the equivalent of five new airports the size of Heathrow will be required by 2030 to meet predicted demand in air travel, suggesting the UK Government's expansion plans would threaten up to 2800 hectares of greenbelt land; two villages, 44 Sites of Special Scientific Interest (SSSIs), seven Areas of Outstanding Natural Beauty (AONBs), eight registered parks and gardens, 49 ancient monuments and 319 listed buildings (CPRE 2003). Hence, to avoid the negative connotations of NIMBYism, many anti-airport protest groups now harness the rhetoric of 'social justice', stressing the economic futility and environmental degradation of *any* such proposal (Griggs and Howarth 2004). For example, anti-Heathrow expansion group HACANClearskies are adamant they are 'not in the business of exporting our misery to someone else' and 'do not want to move Heathrow's problems elsewhere' (cited on Hacan.org.uk website 2006). Further, many local pressure groups have become affiliated to 'AirportWatch', which raises public awareness of airport expansion on a national and global scale.

Accordingly, while Griggs and Howarth (2004, 199) recognise there remains 'a great temptation, indeed a structural necessity, for campaigns to pursue their own interests at the expense of the collective', it is clear that there is an increased awareness of the wider impacts of aeromobility. Whilst recognising that it has granted unprecedented levels of global mobility to an unprecedented number of people, contemporary discourses surrounding aeromobility suggest this comes at a cost, and benefits only a minority of the world's population in any case. The risks – destruction of the ozone layer, increased noise and pollution, fossil fuel depletion, airspace congestion, threat of terrorism, and technological failure – are now depicted as considerable (Monbiot 2006). Some flyers – like drivers – are arguably becoming increasingly reflexive, questioning whether their journeys are necessary, or whether virtual motilities might negate their need for long distance air travel (c.f. Beckmann 2001). Calculations of the carbon emissions associated with particular flights are now widely available on the Internet, and conscientious flyers can compensate for the pollution they create through carbon offsetting schemes.

Clearly, the introduction of carbon tax, rises in fossil fuel price and differential pricing structures may discourage some people from flying some of the time. Yet the possibilities for de-aeromobilitation currently appear limited if one considers how aeromobility is now embedded in the global fabric. Like other invented necessities – cars, television, the Internet – it is impossible to imagine life without flight. Air routes provide the backbone of the global economy; the airport is the key entry point to any world city; flight enables goods, knowledge and people to *flow* across national borders. A vital question concerning aeromobility thus concerns the connection between the production and consumption of air travel; namely, why do people still feel the need to fly in an era when many forms of business and sociality can be conducted at arm's length? Within geography, this question has conventionally been broached in discussions about the importance of face-to-face contact in cultivating trust (e.g. Amin and Cohendet 2004) and occasionally in discussions of the bodily pleasures of tourism (e.g. Wonders and Michalowski 2004). Yet much more remains to be said about the difference between virtual and physical movement, not least because business air travel appears to be increasing despite predictions that new technologies would dispense for the need to fly (Roy and Filiatraut 1998).

While Antoine de Saint-Exupery's poetic writings might have once helped capture the yearning for flight, it is significant that the haptic and sensory pleasures of flight – as an escape from everyday life, a surrendering of authority, and an embrace of enforced passivity – have rarely been addressed since. Fuller (2003) accordingly provides food for thought when she identifies a 'sublimeness' in 'the felt experiences of becoming-airborne' and 'a corresponding banality' in 'the felt experiences of becoming-stuck'. Michel Serres's (1995) fictional character Pantope also offers us some clues to the seductions of air travel:

The wild passion of letting yourself be transported by wind, by burning heat and by cold space... the pleasure of being anonymous, of being quiet for a long time, of existing in no place at all... where the dialogues of others continually slip in... the pleasure of leaving, of being far away, of being missing... the subtle pleasures of erasing the presence of your body, your words and your shadow, of counting for nothing, of hiding yourself, of becoming so light that you fly away...(Serres 1995, 262)

Considering how the pleasures and dangers of flying are represented and embedded in different spaces and times thus remains an important task for geographers, for, as Lassen (2006) notes, virtual travel is unlikely to ever supplant physical travel because the latter is linked to patterns of meaning which far exceed the 'functional'. It is a combination of social needs, obligations, wishes and dreams that necessitates flight. Mapping the expansive global reach of air routes might thus draw our attention to the multiple opportunities that exist for global air travel, but it is only by elucidating the social and cultural geographies of flying that we can begin to understand why air travel continues to constitute the dominant – albeit highly iniquitous - mode of international travel.

CONCLUSION

Geographers have consistently identified the expansion of airspace as one of the principal drivers of globalization, and a key enabler of social distancing. Further, they have used data on passenger and freight movements to map out air transport networks, detailing a space of flows that binds global financial centres together in a seamless network of world cities, but leaves many other spaces only loosely connected. For all that, in this paper we have argued geographers need to move beyond a

mapping of air routes to present empirically-grounded studies of the variegated – and contested – geographies of aeromobility. Inspired by the rise of a putative 'mobilities turn' in the social sciences, and a heightened interest in the socio-technical aspects of transport, this paper has consequently explored some different 'cuts' through global airspace. In so doing, we have demonstrated that the contemporary spaces of global aviation offer a distinctive and intensified form of coordinated spatiality for geographers and social scientists to consider. From the smallest movement of a passenger to flying a 747, airspace is an incredibly complex and differentiated terrain produced by uneven mobilities and immobilities which are continuously intermingling and synchronising with one another (Adey 2006b; 2007; Urry 2003). Crosscut by countless organisations, institutions, governments and authorities, these mobilities are increasingly coordinated and managed by systems of software and code. Future research must hence take seriously what Thrift (2004c) might call 'movement-spaces' that are 'based on continuous calculation at each and every point along each and every line of movement' (see also Dodge and Kitchin, forthcoming).

Given this complexity, our hope is that we have demonstrated that many of the key debates pertaining to aeromobility are too important to be left to transport geographers alone and that they deserve more socially and culturally nuanced interpretations. This paper accordingly flagged up some ways in which geographers' engagement with air transport can move beyond a preoccupation with mapping patterns or flows of movement. We have hence followed Urry (2003) in showing aeromobility is not just about people and planes moving *between* fixed places, and involves complex networks linking the immobile and mobile at a manifold of scales - from the body to the globe. At a micro-bodily level, for example, there are important questions to be addressed about the sensual, felt and affective qualities experienced while mobile or because of aeromobilities (see also Thomas 2001; Bolton and Boyd 2003). Further examination of the intimate (dis)attachments to airports and aircraft, the affective responses to the inhabitation of such spaces, or the violently emotional reception of airport expansion plans, may begin to consolidate the contemporary attention to both mobility studies and the spatialities of affect (Massumi 2002). Such a consolidation is needed if we are to understand how one *feels* while on the move and what kind of desires and pleasures might drive one to move; we can understand this as the relationality between mobility and affect.

But as the spaces of air transportation are beginning to be shaped new kinds of corporeal biopolitics, where bodies are tracked, calculated, scanned and often searched, we might also consider how the body offers a new territory for the control and regulation of mobility (see also Greenhough and Roe 2006). Work on the geographies of affect is particularly relevant here given future scholarship must consider the increasing control of the affective register. We must ask how affective expressions of feeling and emotion are being identified, sorted, sifted and shaped by the contemporary security procedures associated with airspace. Yet as we ask questions about the meanings and emotions of flight, we cannot forget what each and every movement may mean for the environment - what its ultimate cost will be. It is most telling, indeed, that of the many papers published in the newly-inaugurated journal *Mobilities*, only one article has debated issues of environmental impact and sustainability (Cohen 2006). In the final analysis, we might argue that the true inequity of air travel, and indeed any movement, is carried in the relationship between mobility and the environment.

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NOTES

* Peter Adey, Earth Sciences and Geography, Keele University

** Lucy Budd, Phil Hubbard, Department of Geography, Loughborough University

Edited and posted on the web on 3rd December 2007

Note: A later version of this Research Bulletin has been published in [Progress in Human Geography](#), 31 (6) 2007, 773-791

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