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## Introduction

# AIRPORT ASSEMBLAGE

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*Mark B. Salter*

Few sites are more iconographic of both the opportunities and the vulnerabilities of contemporary globalization than the international airport. The popular imagination is filled with images of postmodern hubs that cater to the contemporary road warriors and global nomads that philosopher Peter Sloterdijk and architect Rem Koolhaas have dubbed the “kinetic elite.”<sup>1</sup> Cities unto themselves—with all attendant institutions, social forces, politics, and anxieties—airports are both an exception to and paradigmatic of present-day life. Using a Foucauldian frame, they can be understood as “heterotopias,” social spaces that are “in relation with all other sites, but in such a way to suspect, neutralize, or invert the set of relations that they happen to designate, mirror, or reflect.”<sup>2</sup> Airports are national spaces that connect to international spaces, frontiers that are not at the territorial limit, and grounded sites that embody mobility.<sup>3</sup>

In addition to being local sites of contestation, airports are representative of supermodern “nonplaces” in which social relations are based on mobility rather than fixity.<sup>4</sup> As J. G. Ballard writes, “airports have become a new kind of discontinuous city, whose vast populations, measured by annual passenger throughputs, are entirely transient, purposeful, and for the most part happy. Above all, airports are places of good news.”<sup>5</sup> The glamour and exoticism of the airport as a gateway to other places and the

interstices of travel encourages flights of fancy.<sup>6</sup> Equally, airports have been represented as “a stress laboratory, a no man’s land between the nation and the world, a surveillance machine for automated bodies, shepherded from control station to control state.”<sup>7</sup> For cultural analysts, airports have long been a stock example of the *zeitgeist* that requires no serious or sustained analysis, fieldwork, or empirical evidence.

This collection addresses this naïve public optimism and the gap in current scholarly analysis. The authors respond to the emergent political, societal, economic, and ethical problems illuminated by this “metastable” institution—stable only in its instability:<sup>8</sup> How are flows of people, data, capital, symbols, meanings, and objects managed, controlled, restricted, and monitored? What kind of political, market, and social forces are in play? How are dominant modes of social sorting, coercion, normalization, and authorization reinforced, disrupted, or resisted? What can studying airports tell us about these processes? To what extent can airports be compared across time and space?

Though a growing community of scholars are concerned with the subject of airports, there is no institutionalization of “airport studies” in the social sciences or humanities—no research centers, journals, or professional associations. Aviation institutes and centers of aviation law treat airports as a set of management, business, technical, and design problems with little consideration of the wider analysis of social and political trends. Only cultural critics such as Alastair Gordon, David Pascoe, and Mark Gottdiener provide interpretations of the meanings attributed to airports.<sup>9</sup>

As a sustained conversation about the airport, this volume remedies the absence of social science perspectives in this debate. We present a number of different perspectives on, methodologies about, and claims to the airport. It is clear that multidisciplinary studies are crucial for understanding the airport: social sorting and surveillance, design and culture, organization and management, public administration and multilevel governance, human geography, and political sociology are all crucial to the analysis of this microcosm. Theoretically, we want to “go beyond” the state and the market. As Debbie Lisle writes, “at the airport . . . power is increasingly characterized by its complexity, speed, and mobility. Airports are not only sites of extreme force, surveillance, and discipline. Rather, airports become politically interesting when they are also understood as sites of destabilization, ambiguity, and constant movement. Just as people never stay put at airports, neither does power.”<sup>10</sup> This introduction will use two key concepts to sort the multiple perspectives applied—governmentality and assemblage.

## Governmentality

Airports have long been laboratories for new strategies of both technological and social control. As both legal and irregular international migration flows increase, and state attempts to control these flows become more energetic and more diffuse, airports have taken on an increased significance as ports of entry. They have become sites of intense surveillance, policing, and control. Public and private authorities have taken advantage of the liminal character of airports to conduct policing and border functions, which take place inside the state but at the margins of the law.<sup>11</sup> At the same time, more and more airports have accelerated lanes for the elite, transnational class and invisible corridors for the “deportation class.”<sup>12</sup> But the attempts to control the space of the airport cannot be reduced to border guards, airline agents, and shopping mall attendants.

Governmentality is a useful addition to our theoretical and methodological toolbox because it includes not simply the institutional apparatus of government but also the instances, cases, and fields when “government” is practiced on all manner and spheres of conduct. In short, we are concerned with how particular problems come to be constructed as problems of government, rather than looking *ex post facto* at problem-solving theories.

Foucault argued in his Collège de France lectures *Security, Territory, Population* that he was concerned with the development of modern political rationality, which concerned “the notion of population and the mechanisms capable of ensuring its regulation.”<sup>13</sup> He identified a shift from a pastoral to a managerial mode of sovereign control in the sixteenth and seventeenth centuries. The object of government comes to be constituted differently, not as a people but rather as a population: “a mass of living and coexisting beings who present particular biological and pathological traits and who thus come under specific knowledge and technologies.”<sup>14</sup>

The focus of analysis consequently shifts toward “employing tactics rather than laws . . . to arrange things in such a way that, through a certain number of means, such and such ends may be achieved.”<sup>15</sup> In particular, Foucault is concerned with how particular social issues come to be defined as problems, which are then to be solved by the government (such as insanity, sexual deviance, indolence, indigency, etc.). He uses the clinic, the prison, and the confessional as sites of these specific tactics of governmentality. We would argue that the airport becomes an extremely productive example of an “ensemble formed by the institutions, procedures, analyses, and reflections, the calculations and tactics that allow the exercise of this very specific albeit complex form of power, which has as its target population.”<sup>16</sup> Though not a totalizing institution such as the prison or the clinic,

the airport provides a fascinating example of how (inter)national mobility is first problematized and then managed.

Mobility becomes a governmental problem at the time of the consolidation of the sovereign-territorial state. If the modern mechanisms of population control use statistics and other indirect methods of observation and incarceration, how can the population be reckoned, understood, and managed when it is constantly mobile?<sup>17</sup> Stuart Elden's analysis of early French quarantine regulations and prison architecture demonstrates the importance of visibility and enclosure for Foucauldian analyses.<sup>18</sup> John Torpey, however, makes a different argument. He purports that the state comes to appropriate the "legitimate means of movement," in part, through the control of identity documents, just as it had appropriated the legitimate means of violence and the means of production.<sup>19</sup> In addition to fixed institutions, such as territorial borders, customs and border posts, traffic laws, infrastructure, and passports, the state also described "normal" routes of movement and acceptable modes of fixity.

Indigence suddenly becomes a governmental problem. The control of "security, population, and territory" is essentially a question of the management of mobility: the mobility of things and worth, symbols and ideas, and most importantly, the population. However, this control of mobility is not necessarily direct, through the use of identity papers and internal passes. The development of property rights, the enclosures of public land, the creation of cities as such—all speak to describing and controlling a dispersed system of national (im)mobility. A brilliant example of this kind of analysis is Jeremy Packer, who identifies how the regulation of mobility becomes central to modern governmentality, in his case through an analysis of automobile safety regulations.<sup>20</sup>

The airport lays bare some of these issues with regard to national identity, international mobility, and population control—and requires the analysis not simply of state institutions involved in the administration of the airport as a site but also the governmental construction by various actors, discourses, and practices of (un)acceptable, (ab)normal, and safe/dangerous mobility.<sup>21</sup> In short, in addition to the control of movement, there is a pedagogical function of airports. We follow Mika Aatola's argument that "airports are places where authority is recognized and instructions given for making 'proper' judgments and acknowledgements are given. . . . Airports teach people the central rituals of acknowledgement that are needed to navigate in the Byzantine structures of the modern hierarchical world order."<sup>22</sup> Passage through airports condition and normalize particular identities, certain authorities, and normalize ways of managing the mobility of a population. Thus, there are multiple governmentalities of the airport that describe

and condition the possibility of mobility. This is not to say that airports are homogenous or monolithic. In fact, to present the airport as a controlled, centralized, panoptic, or orderly space is baldly ideological.

## Assemblage

Airports are systems that are dense, fast, and contingent. We want to side-step the question of mobility qua mobility to focus on what the control of that mobility represents.<sup>23</sup> The concept of the “assemblage,” from Gilles Deleuze and Félix Guattari, is particularly useful in analyzing the incomplete, fragmented, and dispersed nature of airport politics. The assemblage is a perspective that examines the “convergence of once discrete systems” of control over a particular space.<sup>24</sup> Building on notions of multiplicity and the rhizome,<sup>25</sup> for Deleuze and Guattari the assemblage represents an “increase in the dimensions of a multiplicity that necessarily changes in nature as it expands its connections. There are no points or positions in a rhizome, such as those found in a structure, tree, or root. There are only lines.”<sup>26</sup> In examining multiplicities of institutions, practices, and processes embedded in a particular space or site, they develop a typology of modes of control that escapes the state/society dualism that has so dogged the social sciences.

Kevin D. Haggerty and Richard V. Ericson describe the *surveillant* assemblage: “discrete flows of an essentially limitless range of other phenomena such as people, signs, chemicals, knowledge and institutions. To dig beneath the surface stability of any entity is to encounter a host of different phenomena and processes working in concert.”<sup>27</sup> Similarly, attempts to control mobility are precisely multiple, public, private, nascent, incomplete, overlapping, redundant, and untidy—yet the result of these attempts is not disorganized freedom but a kind of radical entanglement. The airport is a messy system of systems, embedded within numerous networks and social spheres; it does not simply create freedom or incarceration. Deleuze argues that the institutions of Foucauldian analysis of essentially a series of enclosures has been eclipsed by “a society of control,” in which there is no finality but continual “progressive and dispersed installation of a new system of dominance.”<sup>28</sup>

William Walters and Charlotte Epstein make similar arguments. The biopolitical organization of the modern state system is not simply exclusive or carceral but concerns the policing and monitoring of flows of bodies.<sup>29</sup> Airports are not total institutions but rather nodes in a network of networks that include social, economic, and political actors with differing preferences, goals, logics, intentions, and capabilities. Rather than seek the single key

idea of the airport, critics should instead focus on the resultant system—essentially, systems of rule without systematizers, convergence without coordination. In contrast with the governmentality approach, which assumes a common impulse to govern and to render certain problems amenable to government, the assemblage theory simply takes the resultant field of human activity as the object of study.

For example, Haggerty and Ericson argue that although companies, governments, and individuals each engage in surveillance for different and often conflicting reasons, there is a resultant empirically proven escalation and intensification of surveillance that is not easily resisted or rejected. David Lyon argues that airports are designed “for maximal commerce and for national security . . . [and] although they are analytically separable into ‘citizen’ and ‘consumer’ domains, even these are increasingly blurred.”<sup>30</sup> The advantage of using the airport assemblage is that these categories of official/unofficial, public/private, security/commercial, and incarceration/mobility become less analytically important than the resultant field of control, however messy, random, or antagonistic.

## A Map of the Book

As the balance between global mobility and national security is renegotiated under the twin stars of globalization and the war on terror, this collection looks at politics at the airport—how movement, architectural spaces, discourses, and technologies are deployed to shape and structure the social sorting of safe and dangerous travelers. Oriented toward questions of mobility, space, and control, we examine how airports structure, and are structured by, contemporary political, social, and economic processes. The contributors pay particular attention to the ways that airports have become securitized and technologized. In placing scholars from geography, sociology, cultural theory, and political science in direct conversation with each other, this collection draws together distinct voices, methodologies, and ontologies—though not always in harmony. The collection combines empirically driven analysis by Mark B. Salter, David Lyon, Colin J. Bennett, Gallya Lahav, Francisco R. Klauser, Jean Ruegg, and Valérie November, whose chapters illustrate how to conduct positivist research into the flows of data and people through these spaces, with more theoretically inspired research by Benjamin J. Muller, Peter Adey, and Gillian Fuller, whose chapters use case studies to reflect on contemporary theories of mobility, subjectivity, and power.

Salter reviews the manifold pressures facing contemporary airports in terms of space, time, technology, governance, and security. In examining the

ways that various national and international regulations and practices structure the management of the airport, he suggests that the convergences in the corporatization of global airports, neoliberal trends toward public–private partnerships, and the deregulation of the sector have led to the privatization of public security and the dispersion of airport security throughout urban space and among multiple actors and agencies.

Lyon is one of the key thinkers of surveillance studies, and his previous work describes the airport usefully as a “data filter” that is “structured and dominated by flows of capital and information.”<sup>31</sup> Lyon uses the airport, along with passports, ID cards, and trends in global surveillance, to demonstrate a double analysis of mobile individuals and their “data-doubles.” The securitization of identity is materialized at the airport as a key node in the global transportation network. While grounded in particular sites, Lyon’s chapter extends the study of global surveillance to question how the mobility of individuals is conditioned by the “means of identification.”

Bennett expands on his previous research to demonstrate that the exchange of data between specific “no-fly lists” is more limited than critics suggest. While not definitively reassuring, he certainly indicates the need for further empirical study of the international flows of data gathered in and used at the airport.<sup>32</sup> Bennett argues that a robust and responsible consideration of privacy must take into account the actual movement of “data-doubles.” Following from the discussion of governmentality above, Bennett argues that just as states reclaim a public security function through the restriction of the freedom to fly, both American and Canadian governments will require “the willing cooperation of a variety of civil society actors, and especially airlines.” Through a careful excavation of the legal and bureaucratic paths, along which personal data flows within these two programs, he argues that the networks of control that police the possibilities of mobility, though dispersed between private and public actors, are modest in scope.

Lahav has been published widely in the field of migration studies, and here she examines the privatization of border functions within the American aviation security system.<sup>33</sup> The question of security echoes the case of personal data. Through a careful cost-benefit analysis, Lahav believes that the “dispersal of responsibility among [public and private] actors whose interests do not necessarily coincide,” nevertheless provides a relatively stable aviation security system. She demonstrates how the institutions, rules, and roles of different actors were negotiated to form a robust and flexible system for aviation and border security that is responsive to governmental, commercial, and public pressures.

Generating new and very compelling data, Klasuer, Ruegg, and November set out the micropractices of the CCTV (closed circuit television)

surveillance program at Geneva International Airport. In this extension of previous research, Klauser et al. examine the effect of particular policing practices and policies that operate within a field of risk management.<sup>34</sup> In particular, they argue that surveillance focuses not on “the usual suspects,” as commonly assumed, but rather on risky spaces. Approaching the overlapping desires by the public, public officials, commercial interests, and the police for security and consumption, they argue that the CCTV system has both “repressive” and “creative functionality” that simultaneously deterred and attracted users to the airport.

The ability of CCTV to police individuals, the mobile population, and the faith placed in the technology by the agents of control extends beyond the visual for Muller, whose previous work on biometrics demonstrates the need for close examination of the assumed isomorphism between identity and dossier.<sup>35</sup> Following the trajectory of trusted traveler programs, Muller examines how the application of biometric technologies produce particular kinds of disaggregated and deterritorialized borders that are instantiated at the interface between body and technology rather than the more familiar physical border. This kind of mediated subject, he argues, creates both new techniques of control as well as new possibilities for resistance.

Adey has already provided a number of important contributions to the study of airports.<sup>36</sup> In this volume, Adey continues his previous expansion of Lyon’s work on social sorting to argue that “airports actually work to make these differences [in life chances] by sorting passengers into different modalities.” While engaging the material and corporeal experiences of passengers within the terminal, he treats the airport as a “difference machine,” producing flows and stoppages that create and reinforce other kinds of social, political, and economic separation. Adey connects these mechanisms of distinction and separation to registered traveler programs that engage frequent passengers to exchange privacy for speed of security screening.

Fuller inverts this obsession with confession and security to discuss the design and architecture of airports as seemingly transparent spaces. She argues that though “the airport offers a seemingly unmediated spectacle of movement,” one can distinguish, through the degree of ease within which individuals traverse the controlled spaces of the airport, socioeconomic and political subtexts in the design and operation of these airports.

This collection emerges as a result of the “Moving Targets: Politics of/at the Airport” workshop, which was held concurrently with the first Canadian Aviation Security Conference. The unique cross-pollination among policy makers, industry executives, government officials, and academics has informed our contributions, pushing us to engage with the ethical, political, economic, material, and practical concerns of the governance of the airport.

Consequently, we wish to take seriously the issues of methodology and policy relevance. These chapters are all informed by close empirical study of particular environments, attentive to the lived experiences and meanings of these social spaces given by the participants with no prejudice toward either elite or popular perceptions. Each of the authors discusses the contesting and overlapping structural pressures for profit and security, as well as the unique, particular solutions that individual agents and organizations have devised. In addition to the usual problems of access, studies of airports have become acutely sensitive in an age of generalized anxiety and increased attacks on civil-aviation facilities. Not only is the airport a crucial site of politics, but it is also an important site of study of contemporary global life.

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# THE GLOBAL AIRPORT

## Managing Space, Speed, and Security

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*Mark B. Salter*

Airports are vital and vulnerable nodes in the global mobility regime. The coordinated exploitation of security gaps on 9/11 and direct attacks on Glasgow, Madrid, and other airports subsequently have demonstrated that the lure of adventure and exotic destinations has been overlaid with anxieties, frustration, and fear. Each of the major actors within the global airport face a different set of dilemmas and pressures. This chapter lays out the principal dilemmas in terms of space, speed, and security, based on the literature of airport management.

The increase of passenger and cargo flows, along with a simultaneous pressure for low-priced travel—represented by the growth in number of flights per day and by the enlarged size of aircraft—places two oppositional pressures on airports to both increase the efficiency of movement and extract the maximum levy possible from those passing through the airport by using forced waiting zones. Although technology has generally been viewed as a absolute gain for airport operators, business, and government officials alike, new technologies not only place additional stresses on scarce airport space and screening time but also create a public expectation for absolute security.

The standards and best practices for each of these areas are influenced by the complicated governance environment of international civil aviation, which is affected by global, national, and local pressures. The rubric of governmentality is useful as a framework for this chapter since we avoid pitting commercial and governmental pressures against one another as different species. Rather, the forces of efficiency and security cannot be parsed as simply commercial or statist—just as the motors of profit and risk drive public and private actors alike. As institutions, airports must become expert in the flow dynamics of people, objects, money, and authority as well as try to master space, speed, and security.

## Arrivals

Worldwide, we see deregulation and privatization of the civil aviation sector and of airports in particular.<sup>1</sup> The increasing corporatization of airports represents a bid by governments to enjoy the economic benefits of airports while simultaneously “avoid[ing] the financial burdens associated with subsidizing airport capital investment.”<sup>2</sup> Due to a global lack of capacity in airport facilities, this need for investment is particularly acute. As Michael Carney and Keith Mew argue, the expected growth in the number of passengers, aircraft movements, and air cargo has led to widescale global “governance reform . . . aimed at attracting private capital.”<sup>3</sup> Airports have been completely privatized in the United Kingdom, Austria, Denmark, and Australia; however, in each case, the monopoly is tightly regulated by the government.<sup>4</sup>

Though local governments publicly own American airports, there remains a great pressure to be profitable, as seen in the subcontracting of retail and operational concessions to international airport-management firms.<sup>5</sup> Canada has a mixed system in which private companies operate federally owned airports over the course of forty-year leases.<sup>6</sup> Asian airports are publicly owned but see increasing private participation in expansion plans.<sup>7</sup> Even the expectation of privatization is enough to reorient airport management toward profitability and customer service.<sup>8</sup> Large, global airport hubs (such as London, Frankfurt, Dubai, Singapore, Hong Kong, and so on.) are more market oriented.<sup>9</sup>

Globally, then, there is a trend of shifting the economic burden from local governments to private companies, or public-private partnerships, that has led to an increased emphasis on profit making, while deregulation has led to increased competition among airlines and airports themselves. Within this sector, “the apparent and only possible move to counteract market

weaknesses and hypercompetition involves adopting a new form of market-driven approach by the airport authority as a whole.”<sup>10</sup> Whether public, private, or some combination of the two, global airports operate within a complex web of international, national, and local authorities, typified by the common “airport management committee,” whose stakeholders include the airport authority, airlines, land-side and air-side businesses, cargo agents and freight forwarders, catering and stores, police, immigration and other security officials, as well as regulators, inspectors, and government representatives. Airports are “high-reliability organizations” that must perform many complex functions while maintaining a low error rate in terms of accidents, crimes, acts of unlawful interference, compromised security, or lost bags.<sup>11</sup> We will discuss four major functions of the contemporary airport: (1) flight operations, (2) terminal operations, (3) cargo operations, and (4) the overarching task of aviation security.

Despite particular dips due to recessions—for example, during the severe acute respiratory syndrome (SARS) virus scare or following the 9/11 attacks—the volume of international passenger and cargo transported by civil aviation has been steadily increasing since the end of World War II, with projected exponential increases for the next twenty years. Airports Council International (ACI), the industry organization for global airports, reports that member airports served 4.2 billion passengers in 2005, and it predicts that this number will grow to 7 billion by 2020, by which time “airports estimate that capacity to accommodate demand w[ill] fall short by nearly one billion passengers.”<sup>12</sup>

The International Civil Aviation Organization (ICAO) sets both safety and security standards for civil aviation. Since all global airports are connected, clear standards are required for communications, air-traffic control, signage, runway layout, security, and so on. The standardization of civil aviation regulations provides a fascinating case study for the evolution of international norms and regimes.<sup>13</sup> Flight operations comprise the movement of aircraft, including takeoff and landing, noncommercial flights, fueling, catering, deicing, and so on. Terminal operations include airline check-in, baggage sorting and reconciliation, retail, security screening, policing, fixed-base operations (such as charter aircraft, repair shops, and flying schools), and perimeter and access control. Cargo operations include warehouses, screening, and loading facilities. Finally, aviation security remains an underlying priority for all aspects of airport governance from architecture and design to standard operating procedures and emergency planning. Within this complex environment, authorities are continually pressured to make mobility and the commercial functions of the airport run as smoothly, efficiently, and securely as possible.

There are three general trends that structure the contemporary dilemmas of global airports: the increase in passenger volume, the steady persistence of criminal and terrorist attacks, and an international public and official demand for new security standards. Passenger and cargo volumes have increased steadily over the past twenty years. Following the drop in passenger growth in the aftermath of 9/11, there was a general worldwide trend toward greater-volume passenger travel. Air cargo is a vital sinew of globalization, and a large percentage of high-value, low-volume cargo is being shipped by air. Some experts have argued that the North American air carriers, which were severely affected by the terrorist attacks, stayed profitable through a combination of government subsidies and cargo shipments. The introduction and growth of low-cost budget airlines has seen a dramatic impact on all aspects of civil aviation, including ticket prices, average revenue per passenger kilometer, gate scheduling, landing fees, and airport expansion.<sup>14</sup> The latest generation of jet aircraft represented by the Airbus A380s and Boeing 787s will force airports to adapt runways, apron handling (management of airplanes between runways and gates), and passenger volumes in dramatic ways (similar to the introduction of wide-body jets in the 1970s).

Given the largely transitory population in airports, they are fertile grounds for criminal enterprises.<sup>15</sup> But surprisingly, there is also a general trend toward terrorist acts against airport facilities themselves, even though they are hardened targets.<sup>16</sup> Consequently, there has been demand for greater airport security in terms of passenger, baggage, and airport employees screening; perimeter and sterile area access; and terminal security. General trends in policing, such as the use of closed circuit TV (CCTV) technologies and community-policing models are also evident at global airports. As Peter Adey and David Lyon argue, there is also a coupling of surveillance and self-sorting of passengers according to socially constructed risk profiles. As indicated by this author, Gallya Lahav, David Lyon, and others, the role of many global airports as national ports of entry—in effect, sites of deterritorialized borders—makes these security requirements all the more intensive. The airport is correspondingly a site of concentrated anxiety and planning. The outlook for the next twenty years is one of continual expansion, amplification, and concentration of commercial and policing activity. Within this environment of accelerated change and increased public scrutiny, airports face five chief pressures: (1) space, (2) time, (3) technology, (4) governance, and (5) security.

## Space

As Gillian Fuller and Ross Harley argue, airports are both sites of perpetual motion and are in perpetual motion themselves.<sup>17</sup> The pressures on urban

space, terminal space, and facilities space lead to an impasse: bodies, equipment, and access routes compete for finite space, leading to a kind of horizontal airport sprawl across the urban landscape and a vertical intensification of the core. Airport facilities extend underground, up into the surrounding airspace, and throughout the local neighborhood. Within terminal buildings, baggage, departures, transfer passengers, arrivals, and commercial and administrative areas are often stratified vertically (e.g., baggage in the basement, arrivals on the ground floor, departures and retail above, and administration and air-traffic control in the upper levels). Expansion and renovations mean that “airports [are] never finished. They [are] in a constant state of flux, flirting with obsolesce, reshaping themselves, and adapting to new technologies.”<sup>18</sup>

New facilities and runways in Hong Kong, Sydney, and Tokyo are all built on reclaimed land. Airport expansion plans in other communities are often the focus of intense public debate and resistance, such as the campaign against Terminal Five at Heathrow, Runway Three at Sea-Tac, or recurring protests at the airports in Frankfurt, Sydney, and Toronto.<sup>19</sup> Tension leads to contentious development between urban planners and local officials who wish to accommodate the airport’s clear economic benefits with the desire to avoid environmental and noise pollution.

The crowding of terminal space is matched by the congestion of airspace. American and European governments recognize the coming problems with the current organization of civil airspace. In the United States, one of the largest ever multidepartmental agencies in government history has been convened to develop a Next Generation Air Transportation System (NGATS). The Joint Planning and Development Office (JPDO) coordinates the work of the Federal Aviation Administration (FAA); the National Aeronautics and Space Administration (NASA); and five federal divisions, the Departments of Transportation, Commerce, Defense, and Homeland Security as well as the White House Office of Science and Technology Policy. The JPDO is developing of a set of new standards, processes, and technologies to decrease the congestion in American airspace. The JPDO predicts that American “demand for air transportation is expected to triple by 2025; in Europe, it’s expected to double soon after 2020.”<sup>20</sup>

NGATS is a public–private enterprise that is developing new technologies, standards, and regulations for anticipated implementation in 2025, which will encompass environmental, security, and safety changes.<sup>21</sup> Eurocontrol, the European Organization for the Safety of Air Navigation, is taking a private-sector approach exclusively for air-traffic control, which aims to create a seamless regional system. Currently, there are thirty-four separate air-traffic control operators within Europe.<sup>22</sup> There are no similar

plans or agencies for the Asia-Pacific, although the organization Asia-Pacific Economic Cooperation (APEC) has a transportation working-group, which has aviation security, aviation safety, and air services as well as the Secure Trade in the APEC Region (STAR) series of conferences.

Contemporary airspace is overcrowded, with major overhauls required in North America and Europe to avoid delays or safety and security issues. This has lead primary hub airports to float expansion plans and secondary airports to court the business of low-cost air carriers and cargo companies. Legacy carriers, such as national or flag airlines (British Airways, KLM, Air France, and so on), are awarded landing slots based on grandfathered rights (i.e., a proportion of the landing slots available at the airport, despite expansion or competition).<sup>23</sup> Sean D. Barrett argues that in the regulated European air market “hub airports abdicated control over their vital runway capacity to airline scheduling committees chaired by the national airlines.”<sup>24</sup> This has led low-cost airlines to choose secondary airports, which offer lower landing fees.<sup>25</sup>

Airport architecture has moved away from the original layout of a railway terminus toward the style of a contemporary shopping mall. Inside the terminal space a similar overcrowding exists. With a continual expansion of passenger and baggage volumes, and the increase in cargo facilities and fixed-base operators (FBOs), airport managers are continually trying to balance the architects and retailers’ desires for wide-open shopping arcades with the police or security screeners’ desires for closed, easily containable spaces. Alistair Gordon writes, “antiterrorist measures turned the airport into an electronically controlled environment rivaled only by the maximum security prison. It was more than mere coincidence that the architects responsible for some of these fortified terminals had also designed penitentiaries.”<sup>26</sup>

Twentieth-century airports tended to architecturally gesture toward flight itself, whereas contemporary terminals attempt to act as signposts, impelling motion in their very design.<sup>27</sup> As the drive toward more retail space and more marketing campaigns that feature the airport as a destination in itself progressed, the gray concrete cells were transformed into large, windowed corridors, such as the new Chek Lap Kok airport in Hong Kong. Deyan Sudjic writes,

it is not its sheer size that makes Chek Lap Kok so impressive. It is the sense of order and calm that [Norman] Foster has brought to the interior that makes it so memorable. He has eliminated as much of the visual noise as possible, restricting the structure and the range of finishes to the minimum. At the same time he has brought sunlight right into the heart of the building. The structure is planned to make it as clear as possible in which direction passengers should be heading at every stage of their journey.<sup>28</sup>

As Fuller and Harley suggest, the question of path finding has become more pressing as terminals grow in size and complexity.<sup>29</sup> Current space requirements are determined by dividing total concourse space by the number of transiting passengers and are measured by the ease of traversing the terminal.<sup>30</sup> Some have even suggested that new airport construction aims for a strategic balance of space, speed, and customer satisfaction.

The profits derived from retail space are increasingly important to private or public-private airports. In one example, the private British Airport Authorities “has raised the amount of revenue derived from unregulated commercial sources from 49.5 [percent] in 1984/85 to 71.5 [percent] in 1998/99.”<sup>31</sup> Airports are thus pressured to increase the amount of retail space available.<sup>32</sup> Because competition between airports for long-distance, transfer, and budget passengers drive down other prices, airports are pressured to generate profit from nonaviation sectors. Budget airlines in particular often seek reduced or bulk landing fees, leaving the airport to generate revenue from facilities exclusively.<sup>33</sup> Airport management companies also attempt to include destination attractions: “Frankfurt airport in Germany opened a disco inside the Terminal building, while Amsterdam Schiphol launched a casino in the transit area. . . . Malpensa airport, more sporadically has been organizing music concerts inside Terminal [One]’s walls.”<sup>34</sup>

The efficiency or capacity of airport space is also under new pressure from passenger volumes and security screening regulations. Most global airports engage in “‘smart’ scheduling and preferential gate assignments” so that large aircraft and transfer passengers have the least distance to move and the most time to make connections.<sup>35</sup> In particular, the Airbus A380s and Boeing 787s will average five hundred passengers per flight, depending on the configuration, in contrast to current A380s or 747s, which average three hundred passengers per plane. Global hubs, such as Heathrow, Schiphol, and Frankfurt, are actively courting the A380 market with demonstrations of capacity for increased passenger volume and other facilities. An example of the retrofitting needed for a similar generational shift in aircraft can be seen in the necessary changes to aircraft terminals in the 1970s, with the broad adoption of wide-body and stretch jets, which increased average passenger volume from two hundred to three hundred passengers per plane. As Mark Gottdeiner argues, “their introduction [twenty] years ago necessitated the alteration of nearly every airport in the country.”<sup>36</sup>

In addition to spatial tension between fixed terminals and the increased space required for security screening and security equipment, there are three key technological dilemmas that face global airports. Technology is widely seen as a “force-multiplier” for both security and facilitation by increasing

efficiency and effectiveness, but it also faces a rush to obsolescence. Since there is pressure on global airports to be profit generators, managers, regulators, and operators are faced with difficult decisions about which technologies to make mandatory, balancing unclear security benefits and clear cost.<sup>37</sup> As will be discussed later in the chapter, security is a diffuse good that is hard to quantify in business terms as a return on investment (ROI).

Adherence to government regulations or international ICAO Standards and Recommended Practices (SARPs) is by contrast much clearer; but, by necessity, those standards are much slower than innovations in the market or the security-threat environment. Some airports are experimenting with the use of radio frequency identification devices (RFIDs) on luggage, for greater precision of tracking, which aids both facilitation and security. Other airports are using integrated CCTV systems for the surveillance of all areas of the airport. General Electric Security, for example, has a program called “Facility Commander v2,” which it claims will integrate emergency management, crowd and flow control, and passenger security. However, Kelly Leone and Rongfang Lui suggest that the majority of screening technology operates under capacity because of the relative slowness of human operators needed to clear alarms.<sup>38</sup> Thus, although an in-line checked baggage screening X-ray might possibly clear 360 bags per hour, its actual flow rate is half that. The human is the weakest, and the most adaptive, element of secure flow-management.<sup>39</sup>

The pressure for scarce space has led several groups to suggest the delocalization of the airport, which goes beyond online check-in or self-serve kiosks within the passenger terminal. Airport managers are pushing passenger, baggage, cargo, and security operations away from the physical site of the airport. For example, there is remote check-in at Paddington rail station for flights from Heathrow. Also, American passengers deplane at Vancouver International Airport and are transported to their Alaskan-bound cruise ships without officially “entering” Canada for customs or border control purposes. New programs will be tested in Vancouver for the 2010 Olympics. For example, air passengers will be able to check themselves and their baggage at a number of remote sites, and will then be securely transported to the airport.

The Simplifying Passenger Travel (SPT) Interest Group, affiliated with the industry organization International Air Transport Association (IATA) and many other commercial and government stakeholders, suggests a refinement of security and facilitation procedures through remote airline check-in, home or hotel baggage pick-up, automated check-in at the airport, integrated security screening and travel document assessment, and flexible airport design.<sup>40</sup> One of the keys to the smooth operation of SPT’s “Ideal Passenger Flow” is the incorporation of biometric information into identity

documents. To guard against worries about data protection, privacy, and identity theft,<sup>41</sup> the SPT Interest Group has developed a novel and very interesting notion of “disposable biometrics,” which would be collected and verified at the “one-stop” check-in and used at each subsequent security check, including passenger screening, cabin baggage examination, and boarding. The data would then be erased at departure.<sup>42</sup> The SPT group represents aviation sector leaders’ best attempt to think through the provision of security and facilitation simultaneously, rather than seeing them in competition with one another. By aiming for a security/facilitation process that exceeds current governmental regulations, the sign of the plan’s success will be the ability of governments to manage the industry. One of the hurdles of the SPT interest group has been the development of standards that are acceptable to multiple jurisdictions.

The delocalization of international borders forces air carriers and foreign airports to be the front line of border control. Consequently, passengers are given “board” or “no board” status from foreign governments before departing: pushing the virtual border into the airport. Such a no-fly system is currently in play with flights to Australia, and plans are in the works for one with American-bound European flights and with the Passenger Protect program in Canada. Thus, spatially, one enters the border zone of the destination airport before leaving the departing airport. Similarly, for layover passengers, Changi Airport and Schiphol Airport offer tours of Singapore and Amsterdam, respectively, without officially “entering” the country—the tour bus becomes a mobile instantiation of the airport’s transit zone. In these ways, the airport space is being dispersed throughout the city.

The space of the airport thus extends rhizomatically into the atmosphere—integrated into transport and critical infrastructure, throughout government regulations and business relations, into the surrounding city and country, and across territorial frontiers. Rhizomes such as the strawberry plant or “creeping Charlie” are apt metaphors for the current systems of control at play in the airport, since they expand horizontally in the space provided. In this context, airports represent an assemblage of multiple actors operating according to different and often conflicting logics that lacks a single root-branch architecture, but nevertheless expand across the urban and global landscape. The pressures of security, scarcity, profitability, accountability, and governance create a dense, overdetermined, chaotic, networked topology where the dominant impetus is the management of speed.

## Speed

As Paul Virilio writes, “the loss of material space leads to the government of nothing but time.”<sup>43</sup> The accommodation of current passenger and baggage

flows is a continual balance of efficiency and convenience—essentially a government of time and mobility. As with all modes of transport, global airports go through traffic-volume peaks and troughs. Early morning and early evening flights are in high demand, with off-peak flights such as red-eyes and middays occurring much less frequently. Given the structuring of the common workday into eight- or twelve-hour shifts, airports are chronically under- or overstaffed, and correspondingly under- or overcapacity. This creates problems throughout the airport system: air-traffic control, apron movement and gate assignment, passenger and baggage control, facilities (catering, refueling, cleaning crews, etc.) and stores, and security screening. To some extent, cargo operations are able to make use of this “downtime” in airport schedules, but they also run up against noise restrictions for early morning or late-night flights.

Of course, these schedules are arrayed around hubs in Europe and America. This location has colonial overtones insofar as flights from the Middle East, Asia, and Africa are often timed to arrive at the beginning of the European/American business day. The structuring of aircraft movements around the “typical” business day, and the natural clash with shift scheduling at the airport itself, leads to chronic inefficiency at security screening, passenger and baggage handling, and facilities and retail. The overcrowding of air space has led to ATC delays for global airports.

Budget airlines operate on a point-to-point rather than a hub-and-spoke architecture (as legacy carriers do), and often demand less of the airport in terms of facilities or network connections.<sup>44</sup> Budget airlines—such as EasyJet and RyanAir in Europe; WestJet and Porter Air in Canada; Virgin Blue in Australia; Air Asia in Malaysia; or Ted, Blue, and Southwest in the United States—base their profit margins on reducing the turnaround time of aircraft at the gate, and choosing secondary airports whose landing fees are smaller.<sup>45</sup> These companies aim to keep their planes airborne for as much time as possible, limiting the downtime to twenty to twenty-five minutes for disembarking, cleaning, refueling, restocking, and embarking. (For example, cabin crew act as cleaners in between flights to quicken the process.) These stakeholders put pressure on airport authorities to guarantee that security screening facilities, retail, and catering are available to passengers within very short periods of time.

Legacy carriers operate large hubs—such as United at O’Hare, Delta at Hartsfield-Jackson in Atlanta, British Airways at Heathrow, or KLM at Schiphol—and consequently require much greater baggage, passenger, and facility infrastructure.<sup>46</sup> New airport screening requirements, including in some airports the required rescanning of incoming passengers or baggage (since U.S. and EU requirements for baggage screening are not compatible),

have led to a dramatic slowdown in airport flow.<sup>47</sup> In Canada, increased security precautions and a corresponding air-security service charge may be responsible for the dramatic drop in demand for regional air routes, whose convenience can be topped by rail or bus links. There is some evidence, however, that customer satisfaction is not based solely on wait times.<sup>48</sup> Passengers must be convinced that screening procedures are effective and efficient in order to endure much more stringent security than other modes of transport.<sup>49</sup>

Legacy and budget airlines both pressure airport managers in terms of cost and efficiency, measured by average and maximum wait times for security screening, facilities, and passenger/baggage check-in. But as airports themselves are increasingly under pressure to become profit-making centers, there is a movement toward the creation of “malls for the mobile.”<sup>50</sup> In evaluating the tension between the “dwell-time” necessary for the commercial viability of the airport terminal itself and the necessity for the quick flow of aircraft turnaround, Peter Adey is exemplary.<sup>51</sup> He argues persuasively, along with Lloyd, that the airport creates and depends on “dwell-time,” or enforced waiting periods to create retail opportunities.<sup>52</sup>

Unsurprisingly, the more dwell-time, the greater the passengers’ expenditure—although both business and leisure passengers seem to stabilize their purchases after about two hours.<sup>53</sup> As Fraport AG, the operator of Frankfurt Airport City, puts it, “the *homo aeroportis globalis* is a new but by no means rare species . . . all of these people are consumers, whose behavior patterns are changing and are increasingly difficult to predict; marketing experts talk about hybrid, adaptable consumers who switch between luxuries and basics.”<sup>54</sup> Thus, airport managers find themselves needing to present both the image of efficiency and ease of facilitation as well as the image of retail opportunities for the “kinetic elite.” This entails not the creation or elimination of delays but rather the management of speed as a resource—the study of which Paul Virilio calls “dromology.”<sup>55</sup>

Just as there is competition between regional airports for local business, there is competition between global airports for international business. Network analysis indicates that the airports that were most connected within the global aviation network were not the most centrally located.<sup>56</sup> The hub-and-spoke structure of international civil aviation leads to intense competition for global transit points, such as London and Amsterdam, Dubai and Abu Dhabi, Singapore and Hong Kong, and so on. Airports are selling themselves to international passengers as destinations in their own right. Competition both for global leisure-time and for expedited use of facilities is evident in the expansion campaigns in the Persian Gulf: “Airports in the UAE [United Arab Emirates] are investing over AED [UAE

dirham] 46 billion [12.5 billion USD] in airport expansion projects which will increase their capacity from 33 million passengers annually at present to 120 million passengers by 2008.”<sup>57</sup> These hub airports are investing in infrastructure such as shops, cinemas, spas, hotels, gardens, churches, and medical facilities, so that the time spent on the ground at airports is not seen as “dead-time” but rather can be quickly soaked up by the institutions of social and commercial life. In this way, airports can be seen as microcosms of society—although critical analysis on this point needs to be taken further.

## Security

New security requirements have also fundamentally altered the social and political dynamics of contemporary airports.<sup>58</sup> Despite the incredible investment in aviation security since the 9/11 attacks, the protection of global airports requires a wholesale revamping of domestic security and foreign policy.<sup>59</sup> There are three major dilemmas within contemporary airport security: space, speed, and sharing. First, security competes with static commerce and flow dynamics for limited space within the terminal buildings. Second, there is continuous pressure to increase the flow of passengers through security checkpoints, while providing secure dwell-time within commercial areas and securing layover passengers (regardless of the security of their embarking point). Finally, airports are vulnerable nodes and high-value targets in an incredibly complex framework of national and international security. Consequently, the question of responsibility and management of security tasks is often contested.<sup>60</sup> Facilities, stores, catering, and cargo already engage in off-site security, for which they enjoy fewer checks at the airport perimeter. Israeli airport security, which is often lauded as exemplary, does security checks on the buses, trains, and cars destined for the airport some ten to fifteen kilometers away.

The integration of international civil-aviation routes means that the security at core global-hub airports is only as good as the peripheral feeder airports providing the passengers. Since passengers arriving at a global airport may have boarded anywhere, the global aviation security system is hostage to the least secure airport. Developing countries do not have the same resources to spend on aviation security, although a great deal of the work conducted by ICAO falls into the category of assistance.<sup>61</sup> The Pacific Islands Safety Office, for example, aims to equip all airports in member countries with similar metal detection wands and archways to ensure a degree of consistency, although this level of passenger screening would not be up to standards elsewhere. ICAO aims to provide some certainty to the system by its newly inaugurated security audits.

In terms of secured space, airports are divided into public and restricted areas. Sterile areas are those public spaces that have been security screened. Restricted areas cover all nonpublic spaces for which authorization by the National Civil Aviation Authority is required. Landside operations refer to those within the terminal; airside refers to spaces with airplanes such as runways, taxiways, and aprons. However, airport security regulations have changed dramatically in response to terror attacks.

Airport security has always been reactive.<sup>62</sup> The model of terminal and aircraft security in the 1960s and early 1970s focused on the threat of hijacking and screened individuals immediately before they boarded the plane, allowing the majority of terminal space to be public. Since terrorists were assumed to want publicity rather than a high body count, pilots were advised to hand the plane over to terrorists with no struggle. After the attacks in Rome and Athens in 1973, the American Federal Aviation Authority (FAA) imposed new rules: "narrow points of control were established at the 'throat' of each concourse."<sup>63</sup> However, as terrorist attacks on airports increased, notably in Europe, security screening moved farther and farther away from the gate toward centralized screening points, as seen today in the majority of North American and European airports. This allows airport officials to concentrate expensive, large, labor-intensive technology in one site and maximizes the amount of sterile space for retail outlets of passengers who have time to shop.<sup>64</sup>

Technological solutions are seen as the primary way to overcome the challenges of speed and security. The technologies of handheld metal detection wands and walk-through archways are thirty years old, with little improvement over that time. But the space required for security screening has undergone a rapid and profound shift since 9/11, with the inclusion of a wide range of new machines, processes, and technologies. Distinct from the holding-cells or interrogation rooms, which might grace the airport police station, there are increasing requirements for airport security. In addition to the screening of cabin luggage with explosive trace detection involving new machines, techniques, and space, the majority of global airports are mandated by government regulations to provide space for secondary searches of individuals.

The next-generation of scanning technology requires much more space within the screening area than current walk-through metal detectors. Millimeter-wave scanners, back-scatter X-rays, or personal Explosive Detection Systems (EDS) equipment are all currently on trial in a number of U.S. airports. These new machines require two to three times the floor space for the actual machine than current walkthrough archways. This is equally true for checked-baggage screening, which has undergone dramatic changes

since the Air India, Lockerbie, and 9/11 incidents. The need for passenger-baggage reconciliation requires tracking systems and EDS equipment that is integrated into the checked-baggage system.

The chief managerial dynamic in the adoption of technologies for airports is the pace of change, dictated in terms of both capacity and the perceived threat. Expansion and overhaul efforts in all regions of the world demonstrate that passenger and cargo volumes are predicted to rise dramatically over the next twenty years. As the milestones before it—the arrival of the jet, the wide-body, the next-generation passenger jet, next-day courier and cargo delivery, and global supply chains—the emergence of global terror threats to civil aviation, including the use of planes as weapons themselves, has dramatically altered the shape and processes at the airport. Since positive and negative clients (passengers and terrorists) are adaptive, airports are constantly under pressure to adapt to the latest technology—for example, dedicated lanes for self-selected frequent flyers and extra equipment to detect liquid explosives.

The model approach for aviation security is the layering of security systems, but there is no global consensus on the methodology for this layering. Because of ICAO's consensus-based governance model, which will be discussed later, Chicago Treaty Annex 17 aviation-security standards are expressed in ways that are goal oriented rather than prescriptive. Since ICAO required, in Amendment 10 of Annex 17, that all international hold baggage be subject to security screening by January 1, 2006, airports have had to modify their processes according to the different national regulatory interpretations of this requirement.

Thus, with the implementation of new standards for the screening of all checked luggage (not hold baggage, which is a wider category that includes postal shipments and courier packages), we see a technological difference between European and American systems. All checked baggage must be screened, but there is no international consensus on the best way to implement effective screening. European systems have a five-level security screening system, in which bags that are suspect are given more and more intense security until a final check by CT scanner and personal inspection. The American norm is the opposite, seeing the CT scan as the primary and first step toward baggage clearance. The Europeans thus boast of the small number of bags sent to the final level-five CT scan; Americans boast that all bags go through a CT scan but few are opened. Canada, caught between these two great hubs, opted for the European-style system of baggage screening, which has led to all baggage going through the United States to be rescreened at the first American airport it enters, leading to delays and disruption. Other jurisdictions have also reacted differently to recent threats

regarding the use of liquid explosives, with Australia opting out of new screening procedures in place in Europe and North America. This lack of technical consensus is not a deficiency in itself, but it places a strain on the consistency of the global aviation security system and the facilitation activities of global airports.

One of the most pressing governmental issues for aviation security is privatization of security. Market-driven security providers are assumed to be more efficient, whereas government-provided solutions are more stable and more secure.<sup>65</sup> Before the creation of the Transportation Security Authority (TSA), airlines were responsible for passenger and baggage screening, and local authorities were responsible for nonpassenger screening (employees, staff, mechanics, etc.). Since 2001, the TSA has taken over all of these key functions.

In Canada, the Canadian Air Transport Security Authority (CATSA) is responsible to Transport Canada for passenger, baggage, and nonpassenger screening but subcontracts the task to service providers. For example, Transport Canada is responsible for the Security Screening Order, which the CATSA carries out through private service providers, who are in turn inspected by Transport Canada. In the United States, the FAA, under the authority of the Department of Transport, provides the regulations for airport operators, but the Transport Security Agency, under the authority of the Department of Homeland Security, is responsible for airport security screening, regulations, and equipment. In Europe, the majority of countries use federal or local police.

There is a tension between the desire for both efficiency and security.<sup>66</sup> But security is an indirect benefit: passengers, airlines, and terminal retailers are chiefly interested in the processing time rather than security outcomes (except in the event of a disaster). In the American case, about the chronic “underinvestment” in security, Paul Seidenstat observes, “achieving a greater level of security inevitably requires that a higher level of costs be incurred. From the vantage point of airport and airline managers operating in a competitive environment, the benefits flowing to their organizations from tightened security did not justify the added cost.”<sup>67</sup> To meet international and national standards, airports have to invest great resources into security with little direct return.

## Governance

The governance environment for any particular global airport is a combination of international treaties, national regulations and legislation, local bylaws,

and management practices.<sup>68</sup> In North America and Europe, we see a similar structure (although other regions vary). ICAO sets Standards and Recommended Practices, which are endorsed and enacted by the National Civil Aviation Authority. Global best practices are defined by ICAO and the industry groups: IATA and ACI. The National Civil Aviation Authority sets security and safety regulations. Airport authorities are responsible for the operation and expansion of the facilities, and increasingly airport management companies are becoming globalized. Subcontractors, such as catering, facilities, fuel, and so on, are also responsible for safety and security standards, usually monitored, inspected, and licensed by the national authority. Air-traffic control is provided by a not-for-profit corporation in both England and Canada, and by the FAA in the United States, but apron-traffic management is performed by the airport authorities.

While many global airports maintain their own private security forces, local police, customs and excise, and border agents are almost always present as well. Following the trend toward privatization, security screening is performed by public authorities, such as the Transportation Security Administration in the United States; private authorities, such as the British Airports Authority in the United Kingdom; and public-private corporations, such as the Canadian Air Transport Security Authority. Thus, although always under national and international regulation and law, a passenger might pass through the jurisdiction of the local police, private airport security, security screeners, customs and excise, immigration, the national police, and the airline that is responsible for the passenger once they board the plane. This complex environment means that airport authorities must familiarize themselves with ICAO's SARPs, IATA- and ACI-recommended best practices, national regulation, and local bylaws and ordinances.

ICAO is a specialized agency of the United Nations and was formed under the Treaty of Chicago (1944) in order to formalize shared standards of national civil-aviation standards in pursuit of safety, security, and efficiency. The annexes to the treaty deal with all manner of standardization, including rules of the air, aeronautical charts, facilitation, communications, security, and aerodromes.<sup>69</sup> Given its nature as an international organization of sovereign states, as one would expect, once a SARP is communicated to member states, governments are offered the opportunity to file a "notification of difference," by which the government acknowledges how its national aviation regulations or practices differ from the global norm. This "notification of difference" will be amended to the relevant annex and thus become part of public law. Started in 1998, the Voluntary Safety Oversight program encompasses both government licensing of aviation workers, operation of aircraft, and airworthiness; it was recently made universal and

mandatory on January 1, 1999 (Resolution AC 32-11). Rather than “black-listing” of airlines or airports, the ICAO Universal Safety Oversight Audit program aims to identify weaknesses and remedial action plans.

Annex 14, Volume I, of the Chicago Treaty, which has been subject to thirty-nine amendments since 1947, comprises many different aspects of aerodrome design, planning, management, and practices.<sup>70</sup> At the heart of the annex are the design parameters for the landing, taxiway, and apron areas of the airport. Following the prioritization for safety and security, it also includes SARPs regarding fire fighting and rescue equipment and procedures, visual aids for navigation, communications equipment and lighting standards, and the prevention of bird strikes (collisions between birds and aircraft, which can result in crashes). While airport design has evolved from a single railway-like terminus to the large, windowed hallways of contemporary airports, Annex 14 ensures that light colors, apron markings, and runway lengths are standard throughout the signatory countries. Annex 9 contains SARPs regarding the facilitation of passengers and baggage.

Regarding airport security, Annex 17 of the Chicago Treaty, Safeguarding International Civil Aviation against Acts of Unlawful Interference, was adopted in 1974, incorporating language and directives from the Tokyo (1963), Hague (1970), and Montreal (1971) Conventions.

[It] requires each member state to establish a government institution for regulating security and establishing a national civil aviation security program [that must] prevent the presence of weapons, explosives or other dangerous devices aboard aircraft; require the checking and screening of aircraft, passengers, baggage, cargo, and mail; and to require that security personnel be subjected to background checks, qualification requirements, and adequate training.<sup>71</sup>

Annex 17 has been revised twelve times since 1944 to adapt to new risks and challenges, shifting focus since the 1970s from hijacking to attacks on facilities, to sabotage, including the use of aircraft as weapons of mass destruction.

After 9/11, the ICAO adopted Amendment 10, by which domestic aviation is held to the same standards as international aviation security set by the ICAO in a dramatic extension of its powers.<sup>72</sup> Although this extension has subsequently been undone in Annex 11 (published July 1, 2006), there was a reaffirmation of the importance of domestic security for international aviation security. In 2002, the ICAO Council swiftly approved the “Aviation Security Plan of Action,” which requires regular security audits of member states. At present, the Universal Security Audit Program requires all signatory states to undertake an audit by ICAO inspectors on their adherence to

Annex 17 standards, including evaluation of the National Aviation Security Plan and national airports. Audit results are secret and not made public.

Roughly 30 percent of all global airports are in North America, and more than 50 percent of global civil aviation flights occur within American airspace, with Europe contributing a large percentage of the remainder.<sup>73</sup> Consequently, the FAA and the European Civil Aviation Conference (ECAC) play dominant roles in the definition of global standards and norms. The ECAC is a regional civil aviation organization whose membership comprises nearly all members of the European Union. Closely associated with ICAO and European Organisation for the Safety of Air Navigation (EUROCONTROL), ECAC seeks to “harmonise civil aviation policies and practices amongst its Member States.” Together with the European Joint Aviation Associations, the representatives work to establish common safety, air-traffic management, and security standards across the European Union. Both Joint Aviation Authorities (JAA) and ECAC work with the United States for the harmonization of standards. As suggested above, the difference in baggage-screening protocols falls within this realm of disagreement, although standards regarding the screening of liquids have been recently agreed upon.

National civil aviation authorities, such as the FAA in the United States, Transport Canada in Canada, and the Civil Aviation Authority in the United Kingdom, are responsible for the regulation and legislation of the aviation industry. Though historically airports (and airlines) were seen as national assets, trends toward privatization within the past twenty years have seen the majority of European countries, Canada, and the United States all move to privatize airports. National civil aviation authorities thus are left to regulate rather than operate. Traditionally, national regulations have been prescriptive, describing exactly the equipment, procedures, and policies that must be in place. But as the aviation sector adopts a risk-management approach more generally, national regulators are moving slowly toward a results-based regulatory frame.

The Civil Aviation Authority (CAA) of New Zealand commissioned the Swedavia-McGregor Report in 1988, which urged the shift toward results-based regulation. The CAA of New Zealand now conducts “sampling” of safety practices, rather than the usual “inspections,” with a much greater flexibility allowed in the operational details of the security and safety policies.<sup>74</sup> JAA has expressed a desire to move in this direction, as has Transport Canada, although the time horizons vary dramatically across jurisdictions.<sup>75</sup> Flight routes are authorized by the National Civil Aviation Authority, which often involves a security audit of the target airport. For example, for the authorization of a route between Beirut and Toronto,

regardless of the carrier, Canada's government officials would assess the security at the Lebanese airport before approval. The norm within the industry is bilateral rather than multilateral agreements on air routes.

Airport management companies can be multinational companies with operations in multiple jurisdictions, British Airports Authority, for example, runs seven airports in the United Kingdom, has a ten-year contract to operate Indianapolis International Airport, holds a stake in Budapest and Napoli airports, and is responsible for retail management at Boston, Baltimore, and Pittsburgh airports.<sup>76</sup> The Vancouver International Airport Authority operates five other airports in Canada including Hamilton, Ontario, and Moncton, New Brunswick, and also international airports in Cyprus, the Dominican Republic, Jamaica, Barbados, and Chile.<sup>77</sup> Fraport AG out of Frankfurt Airport also runs international airports in Cairo, Egypt, and Lima, Peru, as well as other German airports.<sup>78</sup>

The security, safety, and operations responsibilities at a global airport often fall to subcontractors as part of the neoliberal move toward corporatization and privatization.<sup>79</sup> In addition to private security firms, who often supplement national airport police, other companies at the airport play other important roles. Businesses that provide fuel, catering and retail, repair, or cargo facilitation—in short, any company that has access to sterile areas within the airport—assumes both safety and security responsibilities. Usually, these nonpassenger workers who transit between public and sterile areas are identified and verified through the National Civil Aviation Authority. But it is the responsibility of companies with access to airside or secure areas to ensure that there are safety and security protocols and procedures to guarantee that sterility is not compromised. In addition, some countries are moving toward the privatization of security screening at airports.<sup>80</sup>

Two dominant business practices of importance have been almost universally adopted by leaders in the industry and supported by industry associations and international organizations, such as ACI, IATA, ICAO, and ECAC: Security Management Systems and risk management.<sup>81</sup> Following the success of the safety revolution in the late 1980s and early 1990s, due to a number of accidents caused by a lack of safety protocols, the industry adopted the Safety Management System (SMS) approach. Within SMS, airports (airlines and other facilities) are required to demonstrate an ongoing and overarching system for ensuring consistent safety standards. The SMS approach entails a process for implementation and continual evaluation of the safety system, clearly laid out responsibilities and procedures such as a safety committee or safety officer, a clear risk-management system, and post-event assessment.

As the ICAO Accident Prevention Program describes, “An SMS is evidence-based, in that it requires the analysis of actual data to identify hazards. Using risk assessment techniques, priorities are set for reducing the potential consequences of the hazards. Strategies to reduce or eliminate the hazards are then developed and implemented with clearly established accountabilities. The situation is reassessed on a recurrent basis and additional measures are implemented as required.”<sup>82</sup> The safety audits conducted by ICAO, ECAC, and IATA evaluate members for compliance as an enforcement measure, but the SMS approach aims to integrate safety into the business culture to go beyond simple regulatory compliance. Wanting to draw on the success of SMS for security, proponents of a Security Management System (SEMS) argue that a similar standard is required for civil-aviation security.

The political impetus for SEMS came from the 33rd ICAO Assembly meeting, which took place immediately after September 11, 2001.<sup>83</sup> Although IATA has advanced with the SEMS agenda faster than ICAO—as one would expect from an industry group compared to an intergovernmental organization—there is a broad consensus that SEMS is a vital component of the Universal Security Audit Program. SEMS also aims to incorporate risk analysis, policies, procedures, competencies, and continual assessment to push forward a “security culture” above and beyond prescriptive regulatory requirements.<sup>84</sup> The chief objects of SEMS are access control, including perimeter and airside security, preflight aircraft searches, and airport personnel identification; passenger and baggage security; checked-baggage security; cargo security; catering and stores security, risk, and threat assessment; security audits; and accountable document security.<sup>85</sup> SEMS programs are integrated into SMS and quality-management systems (QMS) to develop a sector-wide culture of safety, security, and quality. IATA audits for air transport carriers will include SEMS evaluation after 2007, but there is no deadline for the application of SEMS to airports.<sup>86</sup>

Risk management has become the governance touchstone of the post-9/11 world, arising in the academic fields of sociology and criminology, and the private fields of insurance and policing. It involves conceiving risk as a business asset just like any other. In other words, businesses, governments, and airport authorities must plan for failure and allocate resources, procedures, and policies according to the probability and impact of certain unavoidable risks. Risk assessment estimates the expected probability and severity of different potential events, and then ranks them in order of effect. Risk is then, mitigated, avoided, transferred, or accepted according to the abilities and environment of the authority. According to ICAO, risk management is “the identification, analysis and elimination (and/or control to an

acceptable level) of those hazards, as well as the subsequent risks that threaten the viability of an organization.”<sup>87</sup>

A full consideration of the impact of risk and risk management on the governance of public goods, such as aviation safety and security, is outside the scope of this chapter.<sup>88</sup> But there is good evidence from various quarters that because both the probability and impact of security breaches (and to a lesser extent accidents) are largely *incalculable*, the risk management approach is *inappropriate*. While the insurance industry and risk consultancies benefit from the wide-scale adoption of this scheme, it is unclear whether risk management benefits passengers, managers, or the general public. Risk management is an essential component for both SMS and SEMS. However, in SMS, the known threats are physical—the deterioration of component parts, weather, climate, and so on—and vary within a predictable scale. Security risks are both unpredictable and adaptive. Both criminal and terrorist groups are able to change tactics and strategies based on the preventative approaches taken by the airport.

Airport authorities are expected by governments and shareholders to manage their risk or exposure. For example, most of Canada experiences a cold and snowy winter, which creates problems of icing on the wings of aircraft bound to take off. Airports in Canada that experience such conditions consequently avoid or mitigate the risks of an accident by meteorological equipment and de-icing stations. The frequency of icing is high in the winter, and the impact depends on the size of the airport. Thus, the very busy Toronto International Airport has a capacity to allow twelve Boeing 737s to be concurrently de-iced at its central facility, while the smaller Ottawa airport has the capacity for two aircraft.<sup>89</sup> Furthermore, due to the risk of environmental damage by the de-icing fluid, the facilities have been designed to capture and re-use the majority of the glycol used to de-ice.

With environmental hazards, facility design, apron accidents, or aviation safety, there is a relatively robust scientific consensus on the probability and impact of events. However, there is no such database for criminal and terrorist activities that can act as a reliable predictor for the future. In short, the risk-management system attempts to quantify and rank dangers that are unquantifiable and cannot be ranked. Not only are terrorists and criminals adaptive in a way that the physical environment or aircraft part is not but also the political risk of terror attacks is openly and actively contested. Determining metal fatigue, the frequency of bird strikes, and the environmental impact of de-icing fluid is a science; determining the likelihood of a terrorist attack is not a science. Despite the global consensus on the integration of risk management into airport management, there is no compelling evidence that it will yield beneficial results.

Authority and corporate governance models seek to adapt quality- and safety-management systems to aviation security in order to create organizations that share a culture of quality, safety, and security that rises above the minimum standard of regulatory compliance. Leading this trend is a movement toward results-oriented regulation, as the New Zealand Civil Aviation Authority has enacted. Each jurisdiction depends on every other node in the global mobility network, but questions of development and capacity persist. If Europe and the United States cannot agree on a procedure or standard for checked-baggage screening, how might a consensus develop on security among nearly two hundred sovereign states of varying degrees of development, thousands of airports, and tens of thousands of aircraft?

## Departures

New aviation security requirements and privatization have dramatically altered the management of global airports. Pushed to generate nonaviation profit centers and simultaneously to manage public safety and convenience, airports have reinvented the balance of sterile and public areas. Grand sky terminals and wing-shaped buildings have been replaced by glass-and-steel superstructures, which engender particular kinds of motion and immobility, under the watchful eyes of marketing gurus and surveillance experts. Airport managers struggle over the allocation of space, the apportioning of time, and the investment in technology. The Simplifying Passenger Travel Interest Group's "Ideal Process Flow" is indicative of the most advanced position in the industry, using technology to disperse the airport functions throughout the urban space and enhance facilitation by the capture and use of biometric information. Within this system of conflicting stresses, the regulatory environment is overdetermined by international, national, and local regulations. The modern airport is, in essence, a system of systems that functions as a single node in a complex global network.

As this chapter has demonstrated, the vast majority of the management literature views the airport as a series of technical, managerial, bureaucratic, and regulatory problems to be solved. The governmentality of the airport goes unquestioned: how is it that international mobility and civil aviation came to be a problem that needed this array of solutions? The power of the market, the state, and society are all for the most part ignored. There are three competing models for understanding the modern airport within social science: as a total institution, as a heterotopia ("other" space, which contains many contradictions), or as a rhizome.

Popular accounts often take the airport to be a self-contained institution, complete with health clinics, religious sites, entertainment, hospitality,

and police power. Airports are thus read as a gauge of the power of the state and the relations between the state and society. The airport serves as a miniature example of other social processes of management and control: “a place where the underlying forces and anxieties of modern living are revealed.”<sup>90</sup> They are seen as a microcosm that can illuminate the real dynamics of “models of our future.”<sup>91</sup>

Critical voices often view the airport as a heterotopia by indicating how certain economic, political, and social processes operate at the limit of societies. Airports are not complete institutions, but liminal institutions that exist at the edges of the state.<sup>92</sup> In particular, the discussion of airports as “non-places” inverts the analysis from the institution or the framework to the social meaning given to the interactions of the individuals: the super-modern space “deals only with individuals (customers, passengers, users, listeners), but they are identified (name, occupation, place of birth, address) only on entering or leaving . . . the non-place is the opposite of utopia: it exists, and it does not contain any organic society.”<sup>93</sup>

Both of these models, however, suggest an underlying rationale or logic—a sort of inner truth or final goal. A better assumption is that there is no teleology of the airport, but rather that the airport is better understood as a rhizome. While there is not a concerted “controller” of airports, each of the operating networks has an interest in an increase in the control of space and management of speed at the airport—both of which depend on a problematization of mobility. The airport is an exception to normal urban spaces and a laboratory for testing wider schemes of social control—simultaneously individualizing travelers and rendering individual mobility as a national security threat. The global airport is a barometer of the state of society and must be studied carefully by scholars—who measure not simply the economics or business cases but also the democratic and social implications of new modes of control and facilitation.

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