

The Airport and the Calculus of Retail

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Eero Saarinen's desire to evoke an upward soaring quality in his TWA terminal at Kennedy Airport seems innocent now, and almost irrelevant against a backdrop of demographic and market studies that tell us: the average annual income of the 23 million passengers traveling through Philadelphia International Airport is \$75,000; the average yearly income for all U.S. airline passengers is \$50,000 to \$68,000 while the income of an average shopping mall customer is \$29,000 annually. Further, the average expenditure per departing passenger at the Pittsburgh Airmall is \$9.50. Before the Airmall, passengers spent an average of \$1.70. The average Japanese passenger leaving San Francisco International to go home spends an average of \$200. The average passenger at Chicago's O'Hare Airport is there for eighty minutes of buying time. Travelers at the Detroit Airport spend an average of ninety minutes of "dwell time" there. Seventy per cent of them pass through the 125,000 square feet of retail space. At Heathrow's 600,000 square feet of retail space, the average expenditure per passenger is \$25. Heathrow employs 55,000 workers who are also potential retail customers. A typical urban retail space earns about \$600 per square foot; airport retail earns \$1200 per square foot.¹ (*figure 1, figure 2*)

New types of buildings and public spaces are produced and shaped by consumer culture as it intersects with design and demographics. The activities of shopping, leisure and consumption have served to create a convergence of several types of buildings into few. Pure retail space (i.e. the shopping mall) begins to disappear as buying and entertainment space is incorporated into other building types, and goods, services and experiences are made available to potential consumers in many different settings. There is a parallel in what has happened to farming and to the deregulated airline and banking industries—that is the many have become the few and the small have joined to become the conglomerate. (*figure 3*) The new building types of the 20th century, the parking garage, the shopping mall and the entertainment complex have converged at the airport.² (*figure 4*) The behavioristic diagramming and computer animation of predicted consumer activity, marketing and demographic studies of consumers, and retail design

¹ These statistics are from the following sources: average annual income at Philadelphia: T.J. Becker, "Long Overdue Changes in Store for Airport Retailing;" in *Urban Land*, August, 1996, p.26; average of all airport passenger and of shopping mall customers: Margery Al Chalabi, "Airport Retailing Takes Wing;" in *Urban Land*, April 1998, p.104; AirMall expenditure: Margery Al Chalabi, "Airport Retailing Takes Wing;" in *Urban Land*, April 1998, p.103; expenditure before AirMall: Anita Dunham-Potter, "Airport Shopping Takes Off," on [wysiwyg://257/http://www.smarterliving.com/columns/real/Airport19991209.1.html](http://www.smarterliving.com/columns/real/Airport19991209.1.html); average passenger time at O'Hare: T.J. Becker, "Long Overdue Changes in Store for Airport Retailing;" in *Urban Land*, August, 1996, p. 26; average expenditure of Japanese passenger at SFO: Marisa Milanese, "SFO is Set to Soar with Scores of Stores," on http://www.sfbaytraveler.com/sf/stories/sfoshop_20001013.htm; square foot earnings of airport retail: Gary Wolf, "Exploring the Unmaterial World," http://www.wirednews.com/wired/archive/8.06/koolhaas_pr.html; Detroit passenger information: Amy Morgan, "Flying the Friendly Skies of Airport Retail," <http://www.specialtyretail.net/issues/october99/flying.htm>; Heathrow retail space: Deyan Sudjic, 1992 *The 100 Mile City*. Harcourt Brace & Company, p.155; passenger expenditure at Heathrow: Robert Bruegmann, 1996, "Airport City" in *Building for Air Travel: Architecture and Design for Commercial Aviation*, John Zukowsky, ed. Prestel/The Art Institute of Chicago, p.205; Heathrow employees: Koos Bosma, 1996 "European Airports, 1945-1995 Typology, Psychology, and Infrastructure," in *Building for Air Travel: Architecture and Design for Commercial Aviation*, John Zukowsky, ed. Prestel/The Art Institute of Chicago, p.64

² Michael Brawne, "Airport Passenger Buildings," in *Architectural Review*, November, 1962, p. 341

“rules of thumb” employed by the new hybrid marketing/design firms have given us a sameness that Walter Benjamin calls “always the same, masquerading as the ever-changing.” The purpose of this paper is to critically examine design that is generated by these methods, not in terms of retail success, but in terms of a larger issue, that of Durand’s claim that architecture is made by joining a concern for economics with a concern for convenience. My methodology was simply to observe with my eyes and record with my camera at two airports: Philadelphia International Airport and Pittsburgh International Airport.

The issue is brought into focus through an investigation of the airport as a building type that is particularly representative of our time. The current cultural landscape in which the airport sits represents historical continuity: the dream houses of the 19th century—the arcade, the train station, the exhibition hall, the museum, the department store and the diorama are now transformed for 21st century consumers and incorporated into a 21st century building type—the airport—to make the dream house of the present. The airport, in its peripherality and large expanse of separation from other things, provides a captive population of demographically correct potential consumers and it serves to illustrate the intersection of design, demographics and market study. (*figure 5*)

Deregulation, the resultant lowering of landing fees, the trend to privatization and the heightened security measures that began in the 1970s have served to dramatically increase the amount of non-aviation, revenue-producing space included in airport design. The income from retail, concessions and parking has served to offset the lower landing fees that airports have been forced to offer and has helped pay for necessary new construction and renovation.

James Ogilvy noted in *American Demographics* that our economy now is based more on the search by consumers for “vivid experiences” rather than the desire to acquire goods. Today’s airports place themselves in a position to offer both goods and vivid experiences. Singapore’s Changi Airport offers a karaoke lounge, a sauna, a swimming pool and a putting green. Heathrow has four caviar shops. Frankfurt has the largest discotheque in Germany, twenty six restaurants, a bowling alley, three cinemas, including an erotic cinema, a wedding chapel, a furrier, an antique shop and a supermarket. (*figure 6*) Amsterdam’s Schiphol offers a casino and tanning booths. At Hong Kong’s airport, Cathay Pacific offers first class passengers a luxurious spa and bathtubs for two. Chicago has a full service medical clinic. The San Francisco airport has a library, and recent museum exhibitions at Philadelphia International include: Totemic Sculpture, Political Memorabilia, Dance Photography and Vitra Experimental Chair Designs.

The role of the airport as a business has dramatically affected the master plan, the building diagram and the interior space planning diagram. Building typology, once based on Platonic ideals in the 18th century and used as a compositional device in the 19th century, now in the 20th and 21st centuries is based on computer models of consumer movement, demographic market studies, and projections of spending behavior. The various airport plan diagrams and the forces behind their generation call to mind Durand’s 19th century exhortation that “architecture is economy joined to convenience.” These diagrams bear this out as they rationalize for modern use and a modern building type, Durand’s philosophy of an architecture generated by economy and convenience. Only now, the generator is retail space joined to crowd flow studies. (*figure 7*, *figure 8*) The various terminal diagrams were developed around parking, walking distances, passenger flow, and most recently, exposure to retail areas. Henri Lefebvre noted that increasingly, space is expected to pay for itself. An analysis of airport retail and design illustrates Lefebvre’s notion of abstract space, hyper-rationalized and diagrammed to arrange space and its contents in the most profitable way possible, always with an eye toward how space rules the available time of those who might buy.

Airport specific demographics, market studies and spending behavior studies have emerged in the attempt to make airport time and space as profitable as possible. In the same way

that a biochemist might describe the human body as a collection of chemicals, the throngs of humanity passing through the airport are conceived by these studies in purely behavioristic terms—as a flow to be channeled, controlled, manipulated and persuaded to spend. Consumer behavior is analyzed, diagrammed and turned into statistical charts and tables, and these facts and figures are used to make predictions and design recommendations. The passengers amount to a tide of demographic facts spilling through the airport spaces. A 1943 Pencil Points article described the passenger as “a mobile unit, [which] must be controlled and guided for safety and operating efficiency, in his own interest.”³ In the current airport landscape, the “mobile unit” must not only be controlled and guided, but he must be induced to pause and spend his money; airport space and his “dwell time” must be manipulated and calculated to produce as much profit as possible.

The needs and buying behavior of various demographic groups that use airports have been studied in detail through surveys and market analyses. One study conducted by an airport official at the Brisbane airport in Australia considered the buying behavior of airport shoppers. The awkwardly titled paper, “The Effects of Emotion and Time to Shop on Shopping Behaviour in an International Airport,” was presented at a 1999 Consumer Research Conference in the United States. The study draws the seemingly self-evident conclusion that the emotions of the shopper and the available time the shopper has are two factors which influence spending behavior at the airport. The study showed a correlation between shopping and available time: every minute of extra time spent at the airport increased the likelihood of shopping by a factor of 1.0114.⁴

The Portland International Airport conducted its own market and demographics research, investigating traveler needs, traffic counts and projections, and traffic flow patterns. They used the data to inform a major renovation and retail expansion. They took into account passenger and visitor demographics for each airline and each concourse in order to understand consumer behavior and passenger flow for separate areas of the airport. They sought to place concessions and retail areas responsive to those conditions. One of their studies combining market share with flow studies, tracked passengers entering the airport and progressing through security to their gates. The concessionaires counted their sales per hour and calculated the percentage of passenger traffic captured—the capture ratio, and how much in sales was made from that traffic.⁵

The purpose of such studies is to find a way of rationalizing, quantifying and analyzing passenger behavior, and based on this analysis, to predict the factors involved in the propensity to consume. This analysis then is meant to generate design. There is a market niche now for firms specializing in airport retail design. They take into account passenger flow and shopping behavior, and their product consists of 3-D computer models and animations showing passenger movement and anticipated exposure to retail areas. The philosophical issues of space and time are contemplated now in terms of how much income they yield up, and human movement through time and space is considered in terms of spending behavior. Airports are now planned around parking expedience, and the comfort, convenience and amusement of the airline passenger as retail shopper. The flow diagrams wed the predicted consumer path and what Jean Baudrillard calls the object path. A “calculus of objects” is created that includes space, commodity and buyer. The role left for designers now seems to be in bringing these together in an attractive and ultimately profitable way.

³ author not noted, “Aviation as a Stimulus to Architecture: Basic Requirements for Ground Facilities,” in Pencil Points, November, 1943, p. 43

⁴ Brad Bowes, “Research Highlights Unique Airport Retail Environment,” on http://www.bne.com.au/corp/media_releases/29_09_1999.html

⁵ Margery Al Chalabi, “Airport Retailing Takes Wing,” in Urban Land, April, 1998, p. 105

This new genre of firms has emerged to answer the call for more revenue and more revenue-producing space at the airport. These firms join design and market study as they consider passenger flow and shopping behavior. They use the tools of three dimensional modeling and animation to show passenger movement and exposure to retail areas, and they present their findings as factors that should heavily influence terminal design. This kind of retail philosophy has its origins in 19th century department store design and was written about extensively in Emile Zola's *Au Bonheur des Dames*. The main character of the novel, the owner of the first department store in Paris, was "an unrivalled master" in retail design, using display design and circulation layout to direct and manage the crowd and to fill them with the unavoidable impulse to buy. These hybrid firms are the modern day version of Zola's department store owner.

One firm that combines passenger flow studies and shopping behavior studies with design recommendations for clients is Space Syntax, a research facility at UCL (London). Space syntax is described as "a set of techniques for the analysis of spatial configurations of all kinds, especially where spatial configuration seems to be a significant aspect of human affairs, as it is in buildings and cities." The firm has served as a consultant on a variety of mixed use urban projects and sports facilities, and recently applied their methods in the study of passenger/shopper flow and behavior in airports. They published an article titled "Passengers, Pedestrians and Shoppers" in the journal *Passenger Terminal World* which described their techniques. Their method is based on the idea that "movement and communication are essential to the social and economic success of public and private space and that it is the design of space, above all, which determines the movement and interaction of people in the built environment." Their method seems to combine sophisticated computer analysis and graphics, the old psychological theory of behaviorism, and the self-evident idea that space determines movement. They have developed their own software for this analysis. Another of their articles specifically addressed the area of airport retail design. Titled "Moving, Browsing, Buying: Forecasting Passenger Behaviour," it was presented at the third *Passenger Terminal World* Conference in March, 2000. The difference between themselves and other passenger flow analysis models, Space Syntax says, is that while other models analyze "programmed activities" such as check-in, security check and boarding, the researchers at Space Syntax also look at "informal" passenger activities in reaching their recommendations on airport retail design. They claim a 75% success rate in predicting passenger movement—such unprogrammed activities as "shopping, eating and waiting," asserting that the consideration of this kind of behavior is essential to the economic success of "mixed-use" facilities.⁶ Simmel's complaint that we constantly reduce the qualitative to the quantitative is thus illustrated. He says: "The calculating exactness of practical life which has resulted from a money economy corresponds to the ideal of natural science, namely that of transforming the world into an arithmetical problem and of fixing every one of its parts in a mathematical formula. It has been money economy which has thus filled the daily life of so many people with weighing, calculating, enumerating and the reduction of qualitative values to quantitative terms."⁷

The Pittsburgh and Philadelphia airports offer material evidence for the themes covered in this paper. The Pittsburgh airport is a part of USAir's hub and spoke route system which airlines began employing as a result of deregulation. At the hub and spoke airport, passengers are gathered from many originating points and dispersed to their final destinations. Most passengers at a hub airport are connecting passengers with time to spend. The plan of the Pittsburgh airport itself works in much the same way as the route system, gathering passengers at

⁶ <http://www.bartlett.ucl.ac.uk/spacesyntax/retail/retail.html>

⁷ Georg Simmel, "The Metropolis and Mental Life," in *Rethinking Architecture: a Reader in Cultural Theory*, Neil Leach, ed., New York and London: Routledge, 1997, p. 71-72

its shopping mall center and dispersing them to their departure gates. The main terminal building is connected by means of an underground people mover to an X-shaped satellite departure terminal with pier concourses making up the “arms” of the X. From the main terminal building, passengers originating in Pittsburgh are taken, by way of the people mover, directly and inescapably into the Airmall, the 100,000 square foot retail center of the terminal. (*figure 9*) Any of the more than 20 million annual connecting passengers who must change concourses to change planes are also channeled through this buying space. In this shopping center the passenger can buy printer paper, a Big Mac, or she can choose from among the bodiless negligees hanging in the Victoria’s Secret. Body and mind can be soothed between flights—the body for a price at the gym or cosmetics counter, the mind at the chapel or reflection room, still free of charge. A chiropractor is also on the list of amenities at Pittsburgh International.

Philadelphia International Airport is another hub of the USAir hub and spoke route system. The terminal is a long rectangular building with four “finger” concourses extending from it. Narrow connector corridors take passengers from parking and drop-off areas to ticket counters and security. Retail stores and concession areas stand as a second point of passage; beyond security, departing passengers must go through the buying space in order to get to their gates. (*figure 10*) Museum space mingles with retail space there; plexiglas cases house sculptures and interchangeable displays. (*figure 11*) White rocking chairs and faux stone planters are placed in niches facing out onto the tarmac and along the mall-like spaces that lead to the individual concourses. Except for the airport signs, it is indistinguishable from a shopping mall corridor. (*figure 12*) The Philadelphia MarketPlace is located between the B and C “finger” concourses. For the connecting passenger, moving sidewalks and mall spaces tie the fingers together so that anyone changing concourses to change planes is routed through the shopping mall. Those using the moving sidewalk as they make connections can look out on one side to the tarmac and the waiting and taxiing planes below; on the other side are the commodity windows. The passage provides a sort of compromise of two opposing views of the airport, the idea of efficient flow and the idea of enticing those with time, to buy. The airport has the contradictory task of promoting efficient movement of ever-increasing numbers of passengers while seducing the hurried crowds to pause and buy. The moving sidewalk, with its adjoining commodity windows, may represent a massive compromise between the efficient flow necessary for a busy international airport and the pause necessary to choose and ultimately buy. In the constricted space of the moving sidewalk, retailers “exploit the power of place to facilitate consumption”—the departing planes visible on one side, the articles of travel and luxury on the other.⁸ The untouchable objects, like the “look but don’t touch” protocol of a world’s fair or museum, are “valuable [in] that [they] resist our desire to possess them,” occupying the space between pure desire and immediate enjoyment.⁹ In the glass windows the consumer’s gaze can take in simultaneously his own image and the accouterments of lifestyle creation. The commodity windows create a linear diorama of stuff beckoning the passenger, once off the moving sidewalk, to circle back around to the familiarity of the shopping mall and buy. Dioramas, once a substitute for travel, are now a prop and an invitation to buy in a space facilitating travel. With the store entrances on the other side, the retail planners knew enough about the relationship between looking and buying to provide the windows. They constitute the perfect ingredients for a dream world: movement, changing scenes, desire, visions of travel and commodities abundantly displayed. The space of flow joins with the stationary store windows full of what Benjamin called “wish symbols.” The original 19th century shopping arcade, its commodities still there, now has a moving sidewalk; the flaneurs have less time to linger. Neon

⁸ Michelle Lowe, Neil Wrigley, “Towards the New Retail Geography,” in *Retailing, Consumption and Capital: Towards the New Retail Geography*, Longman Group Limited, 1996, p.21

⁹ Georg Simmel, *The Philosophy of Money*, New York and London: Routledge, 1978, p. 67

light sculptures replace the iron and glass above. The flaneurs have changed; the objects have changed; but the calculus of objects remains. When design bows to the calculus of objects, we give in to the “excessive organization of our lives” and we abandon our own humanity.¹⁰

¹⁰ Gadamer, Hans-Georg, *The Beginning of Philosophy*, New York: Continuum, 1998, p.17



Figure 1: Buy, Sell, Roam

JFK International Airport
Photo: the author



Figure 2: Shopping/Departure Concourse

JFK International Airport
Photo: the author



Figure 3: Parking Delta Air Lines Terminal

JFK International Airport
Photo: the author



Figure 4: Shoppers/Flaneurs
Philadelphia International Airport
Photo: the author



Figure 5: Giorgio Armani
JFK International Airport
Photo: the author



Figure 6: Airport Fitness
Pittsburgh International Airport
Photo: the author



Figure 7: Philadelphia Marketplace
Philadelphia International Airport
Photo: the author



Figure 8: Victoria's Secret
Pittsburgh International Airport
Photo: the author



Figure 9: Museum/Shopping Space
Philadelphia International Airport
Photo: the author



Figure 10: Museum/Shopping Space

Philadelphia International Airport

Photo: the author



Figure 11: Moving Sidewalk

Philadelphia International Airport

Photo: the author



Figure 12: Shopping Concourse

Philadelphia International Airport

Photo: the author