

Public Utilities: Mass Transit

by

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Mass transit, otherwise known as urban public transport, is generally taken to mean transportation services in towns and cities provided in vehicles that are shared by multiple unrelated people. The services can be provided by road, on rails, or in some cases on water. The definition usually excludes taxicab services, intercity travel, and local services provided in rural areas. The history and fortunes of mass transit are intricately related to developments in transportation technology and also technology's effect on urban structure.

Horsepower. Prior to 1800, towns and cities were compact, and nearly all travel was on foot or horseback. In some cities the existence of rivers or canals allowed some wealthier residents to live at some distance from the city center and commute by boat (see, for example, the *Diary* of Samuel Pepys). There is also evidence that following development of the harness, horse and oxen carts provided rudimentary systems of public conveyance in towns in the 1700s. However, widespread use was limited, pending the breeding of larger horses and improvements in the deplorable conditions of the roadways. There appears to be some agreement that the first modern incarnation of a horse omnibus was in Nantes, France in 1825, its initial purpose being to convey the public to a spa on the edge of town. This operation also gave us the name omnibus after the "Omnes Omnibus" sign above the hatter's shop of Monsieur Omnes, which was located near the terminal. Within six years the innovation had spread to Paris, London, New York, and Philadelphia. The physical limitations of horse power limited the capacity of the vehicles. Consequently prices were high, and service was limited to the middle class. More egalitarian transportation was possible when the car was placed on rails (in 1835, in New York City), as a reduction in friction allowed use of a larger car and brought more affordable prices. Average speeds also increased, permitting the development of cities with a radius of two to two and on-half miles from their center. For the first time, persons without access to their own horse or carriage could live at some distance from their workplace. This development occurred at the same time that the first railroads started to provide commuter service - albeit with little influence on urban forms because stations had to be spaced far apart, and the termini did not penetrate the centers of most cities.

Electric Traction. Urban transport was limited by the speed and the capacity of the horse. Although steam traction was attempted on the existing horse car lines, it soon became apparent that faster and higher-capacity services would be possible only if there were grade separation from street level. The first subsurface steam line was introduced in London in 1863, and the first elevated line in New York City in 1868. While speeds were certainly faster, and the congestion at ground level was avoided, these vehicles' smoke and soot were not much of an

improvement over the smell and health risks of the substantial volumes of horse manure. The use of underground cables to move the cars promised a somewhat cleaner alternative (from 1873 on in San Francisco), but the real breakthrough came in 1888 with the first substantial deployment of an electric streetcar (tramway) in Richmond, Virginia. American engineer Frank Sprague (1857-1934) mounted the electrical traction motors on the vehicle's axles and drew electrical feed from an overhead wire. Nine years later in Chicago, Sprague introduced a multiple-unit system whereby one driver could control all the motors on the train, thus starting a revolution.

Transit's Heyday. In the 1890s, existing horse- and cable-car lines were electrified and extended, and electric elevated and subway systems were constructed in the major cities. The resulting higher speeds allowed the new systems to serve areas four to five miles from the city center, which were beyond the reach of the horse bus but closer than the areas served by commuter railroads. Moreover, the high capacity of these systems allowed fares that all could afford. The use of a flat rather than a distance-based fare further encouraged workers to move away from congested and disease-ridden housing that surrounded the commercial centers. This was perhaps the heyday of mass transit, as the various streetcar lines amalgamated to form large combines that provided transit service, generated electricity, and acted as property developers. It is reasonable to postulate that the only time in its history when transit was profitable was during the period when the companies were actually property developers who provided transit service as a subsidiary business. The developments spread beyond Europe and North America as electric subway systems opened in Buenos Aires (1914) and Tokyo (1927).

The dominance of the streetcar/tramway companies was short-lived. Motorbus services started in London in 1904 and New York in 1905. Moreover, private motorcars and shared taxicab, or jitney, services started to nibble at the edge of the market. Jitney and private bus services flourished in the years around the end of World War I, leading the existing transit companies to demand regulation to protect their markets. The consequent regulation came at a price, however. Rather shady pricing and financial dealings by streetcar companies in the 1890s led to public demands for price controls or public ownership. With rising costs, limitations on prices, competition from the car, and a legacy of overcapitalization and overexpansion in the 1890s, many private companies went bankrupt in the 1920s or during the Depression of the 1930s. Public ownership became more widespread. Per capita transit use declined throughout the twentieth century, but an increase in urban population partly counteracted that decline in the early years of the century, resulting in a peacetime peak in the absolute number of transit riders in the mid-1920s.

Public Ownership and Subsidies. After a boom in transit use during the World War II, the financial decline continued in the 1950s, now hastened as prosperity and increasing automobile ownership allowed for the development of low-density suburbs of single-family homes on the edge of traditional cities, away from traditional transit-served corridors. Industry also moved from locations close to rail yards in the center of traditional cities to those close to suburban intercity highways. Social turmoil in the 1960s further hastened the depopulation of older cities. The widespread availability of air-conditioning and the opening up of underpopulated areas of the Americas and Australasia led to the construction of new large cities that were totally automobile-dependent and significantly different in structure from traditional cities. It is frequently argued that nearly all cities that were founded, or expanded rapidly, in the twentieth

century have developed an urban pattern that consigned transit the role of a fringe mode of transportation. Some older cities (Detroit and Los Angeles are notable examples) became so automobile-dependent that public transit services all but disappeared.

In the short term, operators in traditional cities were able to remain solvent by the substitution of lower-cost trackless trolley buses and motor buses for streetcars/tramways. However, by the mid-1960s, all these gains had been reaped. Public operating subsidies were needed if these operators were to remain solvent. Consequently, the remainder of the industry passed into public ownership, there being a reluctance at the time to provide subsidy funds to private entities. At the same time, many relatively old but secondary cities whose population had grown since the 1940s (Toronto, Stockholm, Rome, Nagoya) demanded that mass transit rail systems be built to create or preserve high-density downtowns. It became the norm to construct these new systems using public funds. Some authors are of the opinion that many of these systems are overbuilt, and far greater benefits could be obtained with a resurgence of less-expensive streetcar, now known as light rail transit (LRT), or bus systems. This is equally true in the developing world (São Paulo, Caracas, Hong Kong), where many systems were built with foreign-aid money and with equipment and technology sold by companies in developed countries. For many of the new systems, particularly in North America, actual performance has been disappointing, with higher costs and lower demand than the proponents had claimed.

Deregulation and Privatization. The great expansion of public operating subsidies, particularly in the 1970s, gave rise to the suspicion that much of these funds had been channeled into wage increases for the staff, operating inefficiencies, and the pursuit of political or social goals. Also, the increasing subsidies did not stop the contraction of demand in the face of competition from the automobile. A backlash developed, with some observers looking to the commercial success of the descendants of the jitneys in the form of private minibus services in Kuala Lumpur, Malaysia and Santiago de Chile. These authors argued that only private enterprise and competition could restore the fortunes of transit.

The British Transport Act of 1985 marked the start of the privatization era for transit. In Britain, formerly publicly owned operators were sold to the private sector. Now routes with high demand are provided commercially at commercial fares. Provision of services that still require subsidies are procured on short-term competitive contracts. Outside of London, entry restrictions were removed from the commercial sector of the market. In London, on-the-road competition was not allowed, but all routes - profitable and unprofitable - are provided by short-term franchises of three to five years. In the 1990s, privatization spread across the developed world, many parts of the former communist world, Asia, and South America. In most cases, privatization followed the London model, rather than providing full, unfettered competition. All evidence points to unit-cost reductions by at least 30 percent. By the mid-1990s, privatization was being applied to rail services in addition to bus services. However, with a few exceptions (as, for example, in Denver, Indianapolis, and Phoenix), privatization has not made many inroads in the United States. In some countries such as Jamaica and in many parts of Africa, where unemployment is high and labor costs are low, either legal or illegal owner-operated jitneys have become so numerous and successful that the traditional public operator has been forced out of business. Although some economists have promoted the reintroduction of jitneys in developed countries, high labor costs and low unemployment rates have usually hindered the supply of these services. Indeed, in

Britain the minibuses introduced by many companies immediately after deregulation have become less “mini” over time, and now approach the forty-seat vehicles that economists have calculated to be the optimal vehicle size.

The Future. The future of mass transit is unclear. After a century of decline, there may be new signs of hope. The fortunes of many traditional cities rebounded in the 1990s. Ridership is up in New York, London, and other cities for the first time since the 1920s (but not in the British provincial cities that have “enjoyed” the benefits of complete deregulation for fifteen years). Privatization has removed much of the midcentury excesses of regulation and subsidy-induced inefficiencies. The increasing road congestion in many of the more automobile-dominated cities has brought about a demand for the introduction of higher-density living and transit alternatives. Still there seems to be a preference by planners for high-cost rail-based systems rather than lower-cost road-based systems.

Of course, transit remains strong in countries with large populations, limited land availability, and/or low incomes that limited private-car ownership. Hong Kong, Singapore, Seoul, Mexico City, and the Japanese cities are strong mass-transit markets and may be expected to remain so for decades to come as driving becomes almost impossible. Jitneys and shared taxis dominate in the large African cities, and new rail and bus-based systems are being deployed to solve the traffic problems of Bangkok and the Indian subcontinent. From a worldwide perspective, the reports of mass transit’s death are very much exaggerated.

Bibliography

Clutton-Brock, Juliet. *Horse Power: A History of the Horse and the Donkey in Human Societies*. Cambridge, Mass., 1992. Equine forms of transportation prior to 1800.

Garbutt, Paul E. *London Transport and the Politicians*. London, 1985. Illustrates how political influence shaped mass transit from 1960 to 1985.

Glaister, Stephen, ed. *Transport Subsidy*. Newbury, UK, 1987. A collection of essays discussing optimal levels of subsidies.

Gómez-Ibáñez, José A, and John R. Meyer. *Going Private: The International Experience with Transport Privatization*. Washington, D.C., 1993. A review of the initial stages of privatization.

Kain, John F. “The Urban Transportation Problem: A Reexamination and Update.” In *Essays in Transportation Economics and Policy: A Handbook in Honor of John R. Meyer*, edited by José Gómez-Ibáñez, William B. Tye and Clifford Winston, pp. 359-401. Washington, D.C., 1999. Discusses the decline of transit and critiques the preference for building rail-based systems. It updates an influential 1965 book that Kain co-authored.

Pickrell, Don H. "Rising Deficits and the Uses of Transit Subsidies in the United States." *Journal of Transport Economics and Policy*. 19. 3 (1985), 281-298. Discusses the diversion of subsidy funds into cost inefficiencies in the 1970s.

Thomson, J. Michael. *Great Cities and their Traffic*. Harmondsworth, UK, 1977. Shows how the urban form of the cities around the world is related to their transportation system.

Vance, James E., Jr. *Capturing the Horizon: The Historical Geography of Transportation*. New York, 1986. A text book treatment of the history of transportation. Chapter 5 provides a comprehensive treatment of early urban transportation.

Waters, Alan A. "The Benefits of Minibuses: The Case of Kuala Lumpur," *Journal of Transport Economics and Policy* 13.3 (1979), 320-334. Suggests that a free market could lead to improved service by the return of jitneys. Written by an author who was influential in public-policy decisions of the British government.