

Rebuttal to “GM and the Demise of Streetcars”

by Christopher Zearfoss

The article “General Motors and the Demise of Streetcars” by Cliff Slater, which appeared in the Summer 1997 issue of *Transportation Quarterly*, contains many errors of fact, implication, context, omission, and conclusion. While it may be true that General Motors (GM) was not involved directly in streetcar phaseouts on most U.S. transit systems, clearly GM was (and is) a prime member of the highway lobby, whose overarching goal is to maximize private auto use to the detriment or exclusion of other modes. Therefore, it is surprising that the ostensibly knowledgeable sources, quoted by the author as having disputed Mr. Snell’s premise, genuinely believe that “replacement of streetcars by buses was a *normal* (emphasis added) economic event.”

Numerous studies by various institutions and groups, with no particular ax to grind on the streetcar-versus-bus issue, have documented the huge subsidy of auto use in this country—which a 1995 study by the U.S. Office of Technology Assessment places in the range of \$447 to \$899 billion annually. If the near-complete conversion from streetcars to motor buses by the late 1960s had been the panacea that the author portrays, then why was this development followed almost immedi-

ately by governmental takeover of the converted bus transit systems? Even the surviving privately run, fixed-route, intercity bus lines have teetered on the brink in recent decades, and have been saved from extinction only through government subsidies. Charter and tour operations are the only settings where private-sector buses have survived on their own.

GM’s activities, and those of its affiliates such as National City Lines (NCL), may have been (mostly) legitimate, but to imply that they have been in the best interests of transit riders or the cities in which they live is a view that can best be described as naive. GM’s initial goal was to divert streetcar riders to buses; its ultimate goal was to shift riders from transit to autos altogether. The famous comment by a GM executive, “What is good for General Motors is good for America,” crystallizes GM’s philosophy.

Monopolizing the Sale of Supplies

The author’s apologetic characterization of the conviction of GM and its associate corporations (“to monopolize the sale of supplies used by the local transportation companies”) nonetheless admits that its holding company, NCL, made decisions to purchase only those “supplies” sold by GM and its allies. By defi-

dition, that excluded manufacturers of streetcars, track, and associated traction power materials and equipment. The net result, wherever NCL (or managers with ties to or persuaded by them) operated, was that they, with precious few exceptions, made sure that the "supplies" sold to them were related to motor buses, to the exclusion of streetcars. In other words, they monopolized in favor of "complete and exclusive possession and control" (Webster's definition of "monopoly") of transit service by buses to the detriment of streetcars. The author's attempt to circumscribe GM's complicity so narrowly is an exercise in semantics.

The author betrays his predilections when he disparages those who question our national obsession with the auto, and dismisses any talk of an energy crisis as "hysteria." Furthermore, he decries as "unfair" the strictures imposed on the chaotic early jitney operations, most of which were of the sort under which any responsible public utility must function.

Early Streetcar and Bus Technology

Allegations that streetcar technology was stagnant during the 1920s, and that buses during the 1920s were faster and more comfortable than streetcars, are incorrect. Many precursors to the Presidents' Conference Committee (PCC car)¹ streetcar were introduced or perfected during the 1920s. These include: herringbone gears for quieter operation; high-horsepower traction motors for better acceleration; the large, lightweight, one-man car with related safety devices for faster and more efficient service; and improved seating, illumination, and interior design.

Buses of that era, notwithstanding introduction of "balloon" tires, were limited by inadequate engines that "died" on inclines, equipped with jerky manual transmissions, beset by smelly exhaust fumes, and plagued by primitive suspension systems that severely compromised ride quality.

The typical transit bus of the 1920s seated only 30 passengers in a cramped interior with a 13-inch-wide aisle, inadequate room for standees or passenger circulation, and a single door at the front. The typical streetcar seated nearly twice as many riders and featured 29-inch-wide aisles (or wider, depending on seating configuration), plenty of room for standees and circulation of boarding and alighting passengers, and two sets of double-stream doors.

On all but lightly traveled routes, the number of extra buses required to afford capacity equivalent to that of streetcars would have slowed service and exacerbated traffic congestion due to their numbers and slowness in taking on and discharging passengers. Any speed advantages of buses over streetcars were mostly traceable to the fact that they operated as an express or limited-stop premium service, or were confined to service in less-congested areas such as streetcar feeders.

Accordingly, in 1920 when the bus was little more than a motorized stagecoach, for the New York Commissioner of Plants and Structures to have asserted that the streetcar should be "discarded" in favor of buses that were "superior in speed, safety, and comfort" indicates that he was woefully misinformed, coerced by outside influences with hostile views toward transit riders, or both.

To the litany of GM firsts in bus technology the author should have

added the many advancements, such as engine-in-rear and articulated designs, which were pioneered by other manufacturers, for instance, Twin Coach. By cornering bus orders through its holding company, NCL, GM ultimately deprived competitors of sales revenues critical to advancement of additional R&D projects.

Early Bus Operating Conditions

Buses in the 1920s did benefit from improved municipal paving—to which bus operators contributed little or nothing to construct or maintain. Paradoxically (and inexplicably condoned by the author), streetcar operators in most cities were responsible for paving maintenance on streets occupied by their tracks, even though the paving was extraneous to operating rail cars. Blanket paving obligations were rarely foisted on other utilities with pipes, conduits, sewer holes, inlets, or grates located in or under the streets.

Safety zones and loading platforms for streetcar passengers often mitigated the safety disadvantage of the streetcars' inability to pull to the curb. On the other hand, onboard passenger accidents were much more frequent with buses, which continually swerved into and out of moving traffic in order to reach curbside stops.

The quote by Thomas E. Mitten, head of the Philadelphia Rapid Transit Company (1911–1929), regarding early bus routes that straddled the “middle-class” market between streetcars and taxis, refers to buses that were operated at premium fares and with a guaranteed-seat policy. “First-class” streetcar services could have offered equal or better amenities. It was the contemporary buses' physical and performance drawbacks that relegated them to limited duty.

It is misleading to suggest that buses always afforded enhanced travel

time in suburban settings. Trolley lines, especially those serving hilly terrain, such as Pittsburgh and Cincinnati, often utilized private rights-of-way, bridges, or tunnels that were inaccessible to buses, which in many such circumstances were forced to operate via circuitous and time-consuming highway routings.

There is little question that in most small cities—under 100,000—low ridership densities favored conversion to buses as soon as a practicable transit bus became available after the mid-1920s. It also may be true that the percentage of cities relying solely on streetcars for local *surface* transit dropped from *almost* 100% in 1914 to 4% in 1937, and that by 1937, 50% of cities were served only by buses. By 1937, buses also benefitted from nearly universal, publicly funded paved streets, and some coach technology advancements. On the other hand, most streetcar companies still faced unconscionable paving charges, and in some cases, ordinances mandating two-man crews; the PCC streetcar was still in its infancy. Nevertheless, in 1937 the bus was still a minor player in the transit arena, and for the most part it was confined to operation in smaller cities, on lightly traveled shuttle and feeder routes, or on premium-fare or sightseeing routes in the big cities (e.g., Philadelphia's Broad Street or Chicago's Michigan Avenue). In 1937, streetcars still carried 54% of total transit riders, versus only 26% on buses.

Rapid Transit and Suburbanization

The author overlooks two other important factors in the decline of streetcar ridership during the 1920s and 1930s, in addition to the bus and auto: rapid

transit and suburbanization. New York and Philadelphia greatly expanded their subway-elevated networks during those years. Subway-elevated ridership grew by 11% between 1923 and 1937, despite the spread of the auto and the effects of the depression. Much of the new subway-elevated ridership was diverted from parallel surface streetcar lines, which were curtailed or eliminated in the process. With the proliferation of publicly funded paved highways, it became increasingly difficult for streetcar companies to secure financing for track extensions into new suburban territory; hence the bus became transit's first line of defense in the usually unsuccessful attempt to serve suburban sprawl in an efficient manner with fixed-route transit.

Streetcars were branded as "outmoded," and comparative "analyses" and ad campaigns by GM and others inevitably drew specious contrasts between 30-year-old streetcars and virtually brand-new buses. Even when modern streetcars were available, some transit companies shielded them from public view. A demonstrator PCC car was sent to Buffalo, but the transit company, bent on bus conversion, would not operate it. Louisville actually ordered and received some PCC cars, but an intervening management change occurred, again with a bus agenda, and the new regime quickly traded them to Cleveland before Louisville riders ever saw them. Streetcars, with their tracks and overhead wires (although lines in parts of Manhattan and Washington, DC used underground power feed) were excoriated as unsightly, and their operation branded an impediment to general traffic. However, when one considers the urban landscape today, namely streets

choked with auto and bus traffic jams, noise, and fumes; lined with parked vehicles; and cluttered with unsightly traffic engineering hardware (signals, control cabinets, signs, barriers, channelization, pavement markings, etc.), the streetcars' aesthetic intrusiveness in retrospect seems almost benign.

The "flexibility" advantage of buses is greatly exaggerated. One need only compare big-city transit maps of today and 50 years ago to realize that the basic trunk-route systems have changed very little. Tracks and wires are recognizable selling points for the availability and permanency of transit service. A bus line is much more ephemeral, and is subject to detours that strand riders and reroutings that deprive one neighborhood of service in order to chase after the "next-best market." Streetcars can operate in subways, tunnels, grassy medians, and in pedestrian malls, where bus operation is either impossible or undesirable; in these contexts, streetcars are more flexible than buses.

Conversion from Streetcars to Buses

The author misrepresents a streetcar executive's 1923 denial that the bus would "replace the electric railway industry." The executive did *not* say that there was no place for the bus; whereas the author's acceptance of the streetcar's relegation to near extinction by the motor bus in the United States is unreasonable.

The author's statement that "influential inhabitants" near Fifth Avenue in New York City would not permit streetcar operators to establish service on that street bears heavily on his later references to Manhattan's negative public sentiments concerning street-

cars. Manhattan was (and is) the domicile of the "upper crust," who were likely to be opinion makers on the subject, but who seldom used transit. From their perspective, buses were less disruptive to their limousines, town cars, and taxicabs than streetcars.

New York's Mayor La Guardia had a well-known personal distaste for streetcars, which he viewed as "old fashioned." Some of his planners, such as Robert Moses, felt that the future of New York lay in auto facilities like the West Side Highway—subsequently recognized for the intrusion it was and demolished. If the debate centers around which mode best served the *transit rider and the city as a whole*, not merely those who drove or rode in taxis and who were the predominant cause of urban congestion, then the streetcar was preferable to the bus.

It is worth noting that after Toronto phased out streetcars in favor of buses on its busy Bay Street route in 1963, transit officials lamented the loss of the streetcars, which *had controlled traffic* on the street (and which carried the majority of those using the street), whereas the buses *were controlled by other traffic*.

Paving burdens, fare restrictions, and obstacles to franchise renewals (derivative of outspoken attacks by Mayor La Guardia) combined to prevent the Manhattan streetcar companies from securing loans for new streetcars. And so, during the 1930s, comparisons were being drawn between the newest buses and the poorly maintained, turn-of-the-century streetcars still being operated by the hamstrung streetcar companies. Given the choice, it is no wonder that in polls most people voiced a preference for the bus. The purported "success" of the buses that replaced Madison Avenue

streetcars must be viewed in this context. In pre-air conditioning days, it is difficult to comprehend how buses of that era, which lacked any pollution-control technology, could have enhanced the rentability of "rooms," which presumably were to be found in low-rise structures. The cited ridership increases on Manhattan streetcar lines after bus substitution must also be analyzed in light of the liberalized transfer privileges that typically accompanied the merger of fragmented streetcar companies into consolidated bus franchises.

The author quotes *Bus Transportation* magazine to validate conversions from streetcars to buses in New York and Los Angeles. However, this publication, as an exponent of the bus mode, hardly offered dispassionate perspectives. When NCL took over Los Angeles Railways in 1944, over 1,000 streetcars were in service. When NCL sold out to the Los Angeles Metropolitan Transit Authority (LAMTA) in 1958, fewer than 200 remained. And while Metropolitan Coach Lines may not have had formal NCL affiliation, there were staff connections, and its very name implied a bias toward bus operation. NCL, in fact, gutted the still-substantial Pacific Electric (PE) system that it had absorbed in the early 1950s, such that LAMTA inherited only one route of the once vast, former PE system. Ironically, this route to Long Beach was *restored* in 1990 and is now one of the heaviest U.S. transit lines (50,000 daily riders), but at a cost of hundreds of millions of dollars to replicate what had been dismantled under GM-inspired philosophies.

The author again tacitly accepts the inequitable levying of paving costs onto streetcar operators. He neglects to acknowledge the fact that, to this day,

there is little correlation between roadway charges (including, but not limited to, liquid-fuel taxes) paid by bus operators, and the incremental roadway and bridge maintenance costs occasioned by large, heavy vehicles such as buses. In many instances, where streetcars operated on side-of-the-road or private rights-of-way, trackage was expropriated for roadway projects by highway departments, which seldom compensated streetcar companies for the facilities that required relocation.

Partially offsetting the track and power system expenses was the fact that traction motors and electrical equipment for streetcars were simple and reliable. By contrast, internal-combustion engines and transmissions were much more complex, the refueling process was cumbersome, and tire maintenance was an incessant challenge. Streetcars could endure outdoor storage; buses required expensive indoor storage except in the mildest of climates. Nonetheless, as streetcar operations were contracted, the unit cost of streetcar-related materials and supplies increased because of the shrinking marketplace.

Postwar Technology

The author implies that, by the postwar period, GM's standard 50-passenger bus was equivalent to the PCC streetcar. Comparison of the two vehicles reveals the fallacy of this impression. The GM bus had "two-and-two" seating with narrow 21-inch aisles, accommodated 15 of the 50 seated passengers in longitudinal toe-treading seats, and possessed a feasible capacity with standees of only 64. The typical postwar PCC car could seat 50 passengers, all but one in transverse seats,

and in a configuration that had a generous 41-inch-wide aisle from the center doors forward, which allowed room both for standees and passengers wanting to move to and from the doorways. Even from the center doors back, the PCC car's aisle was 27 inches wide. There were no single seats on the GM bus, while the PCC car seated 11 riders singly—an attraction for certain riders.

The PCC car could carry 78 riders, including standees, versus only 64 on the GM bus. In cost-critical peak periods, this meant that 18% fewer PCC cars were required to perform the same work as GM buses on a pure-capacity basis. Moreover, the PCC car's double-stream front and center doors (unlike GM's single-stream doors) shortened dwell times at transit stops, which reduced cycle times and in some cases permitted fewer streetcars to be scheduled than buses to provide equivalent service frequencies. PCC cars could operate in multiple-unit trains to improve intersection capacity and conserve street space, as demonstrated in Boston, Toronto, and elsewhere. The GM bus's air ride notwithstanding, a PCC car, properly maintained and running on decent track, afforded a ride quality, one largely free from noise and odors, that the GM bus could never match.

The author is curiously silent on the important role of trolley coaches (trackless trolleys) in the transit milieu from the 1930s until the 1960s. Some aver that these vehicles combined many of the optimal features of streetcars and motor buses: quiet, smooth, clean, and efficient electric propulsion; easily maintained vehicles that did not require indoor storage; and relief from track and paving costs. In 1951, trolley

coaches carried almost 27% of transit-revenue passengers in medium-size cities (250,000 to 500,000 population), a market for which they were ideally suited.

The author's 1949 citation from San Francisco of a purported 37% operating cost advantage of buses over streetcars stems largely from the arcane local ordinance that required two-man crews on streetcars, but not on buses. The author also inaccurately refers to Philadelphia's "change[ing] from streetcars to buses in 1961"; actually, Philadelphia made no streetcar-to-bus conversions between 1958 and 1967. In 1955, the Philadelphia Transportation Company (PTC), then a streetcar-dominated system, implemented a balanced improvement program that encompassed 300 new GM buses (mostly to replace older ones), 90 PCC streetcars, and 43 trackless trolleys. Additional modernization, including more PCC cars, was in the planning stages when NCL assumed control of PTC during 1955, and within three years PTC acquired an additional 780 vehicles; not coincidentally, all were GM buses. The results: between 1954 (even with 1,043 old-type, pre-PCC streetcars and no GM buses) and 1958 (no old-type streetcars and 1,080 GM buses), surface-transit revenues dropped 15%, despite an 11% fare increase.

After Philadelphia substituted buses for streetcars on two important downtown streets in 1956, nominally to alleviate traffic congestion, general traffic volumes increased to a degree where transit speeds and ridership levels both decreased. Municipal and general public perception of bus flexibility often translated into more double-parking, street closures, and ad hoc

detours, which slowed service and inconvenienced both through riders and those marooned along the affected portions of the routings.

Nationally, it is interesting to note that between 1945 and 1955, despite extensive streetcar-to-bus conversions (the number of active streetcars declined by 80%), bus ridership actually fell by 27%.

The author's subtle implication that postwar buses were "50% faster" than streetcars begs numerous questions as to routings, street layouts and configurations, size and age of vehicles, express/local service variations, and the need for actual route-by-route modal comparisons—not system averages. Regarding the latter point, costs per vehicle-hour are often a more accurate measure of productivity than are the costs per vehicle-mile offered by the author. A bus driver crawling in 5 mile-per-hour (mph) downtown traffic or whizzing at 40 mph along a boulevard earns that same wage, which the author cites as "the biggest cost item in public transportation expense."

The author states that "by 1941 Honolulu had . . . become an all-bus city," while, in fact, trolley coaches served the most important routes in Honolulu until 1957. He also asserts that by the 1960s, "virtually" the only U.S. cities retaining streetcars did so owing to tunnels that presented ventilation problems. However, this was true in only two of the eight cities retaining trolleys into the late 1960s (Newark and Cleveland). Of Philadelphia's 14 streetcar routes at that time, only 5 operated into the subway. In Canada, Toronto's extensive streetcar system had no tunnel operation; with two very minor exceptions, this remains the case today.

Streetcars Abroad

It is true that the United Kingdom, France, and other countries embarked on streetcar phase-out campaigns similar to that espoused by GM. But, contrary to the author's statement that "virtually all other countries . . . replace[d] their streetcars with buses," extensive streetcar systems survived in numerous cities in Germany, Belgium, the Netherlands, Austria, Switzerland, Italy, and Portugal, as did systems in various Mideast, Australian, and Asian cities.

In North America, Toronto and Mexico City relied primarily on streetcars until the 1970s, when rapid transit/metro construction, not bus conversions, diminished but by no means eliminated the role of streetcars.

Eastern bloc countries rarely abandoned streetcars, principally because they did not establish the automobile as the mode of choice and subsidize it lavishly, as has the United States. Even though the Iron Curtain was lifted almost a decade ago, streetcar systems in Poland, Hungary, the Czech Republic, and many neighboring countries still thrive; if streetcar curtailments occur, they generally are due to metro expansion, not bus substitution. Since reunification, East Berlin streetcar lines have been reextended into West Berlin, which had abandoned streetcars during the Cold War era. In tacit admission of their prior myopia, the United Kingdom and France have been fertile ground for a tramway and

light-rail renaissance over the past decade, and the trend is accelerating.

Conclusions

It is perplexing that the author goes to such great lengths in attempting to exonerate GM from complicity in the decline of the streetcar, given his free admission that GM was *convicted of conspiring* "to monopolize the sale of supplies used by local transportation companies." It certainly is an altogether reasonable assumption that GM's antistreetcar activities extended into other situations that never happened to give rise to lawsuits.

This is not to suggest that, absent GM, the streetcar would be as commonplace today as it was 80 years ago, but neither would it have been driven to the verge of extinction by 1968. Nonetheless, since the 1970s, there has been increasing realization that transportation solutions require multimodal approaches, particularly in larger cities. Accordingly, since 1978, new light rail lines—many with segments possessing traditional streetcar characteristics and a few which are purely streetcar by design—have opened in nearly 20 U.S. and Canadian cities. Over a dozen more are in the construction, design, or planning stages.

The streetcar, evolved to contemporary standards, is making a long-overdue return to the urban scene. This obviously demonstrates that massive conversion from streetcars to buses on major routes was a mistake, one which is costing billions of dollars to rectify.

IDEAS IN MOTION

Endnotes

1. A standardized state-of-the-art streetcar designed under guidance from a group of streetcar company executives from 1929 to 1936. Almost 5,000 PCC cars were produced for North American use between 1936 and 1952.

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