RESEARCH AND REALITY

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For most of the period since World War II, public transit in the United States has been viewed as a dying industry. This characterization of transit, though unfortunate, is understandable. With few exceptions, there has been very little innovation in transit and little encouragement for research and development.

The development of this situation has been due in large part to the belief that the private automobile is the best means of traveling within urban areas. This has led to huge highway building programs on the federal, state, and local levels, with inadequate consideration given to public transit. The political process concentrated all of its efforts on development of highway facilities and therefore did not encourage technological breakthroughs in transit. At the same time, the expansion of the U.S. economy was making it possible for more and more persons to acquire private automobiles. These factors led to a greater degree of decentralization of activity in urban areas. This made it more difficult for transit, which is most efficient in concentrated activity centers, to effectively serve an increasing number of urban trips.

All of these developments served to encourage wider use of automobiles and discouraged use of, and improvements in, transit. Transit became an unattractive "last resort" mode of travel.

In the transit industry, pressure was always greater to minimize fare than to improve the quality of transit equipment and service. Under such conditions almost no funds could be allocated for research and development. This was true even in earlier days when automobile use and the highway network were not as far advanced as they are today. At that time, a 1- or 2-cent fare increase would have gone a long way to upgrade transit systems, but even such minimal fare increases were blocked. The result has been continual postponement of equipment replacement and capital improvement. Physical plant and equipment have in effect been confiscated so as to avoid fare increases even in the face of unavoidable operating cost increases. Research and development were neglected to save capital, and as a result created long-range problems. At the present time, many U.S. transit systems have fallen decades behind in capital renewals.

So we see a picture of deteriorating transit systems, left to make their own way on meager fare revenues, alongside a modern, expanding, heavily subsidized highway network. Two tragic mistakes were the assumptions that transit could yet survive under these conditions and that everyone who could afford to drive his own car could be accommodated by expansion of highway facilities.

The folly of this approach to our urban transportation problems, and the need for a balanced system, is becoming increasingly apparent to transportation experts and government officials at all levels. Specifically, the U.S. Department of Transportation is recognizing the deficiency in transit research and development and is taking corrective action.

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An example is the recent inauguration of the high-speed ground transportation test center in Pueblo, Colorado, which will provide railroads and transit companies with one of the finest research and development facilities in the world. Not only will new concepts in ground transportation such as the linear induction motor and the tracked air cushion vehicle (TACV) be tested here, but also work will begin on solving work-a-day operating problems faced by railroad and transit companies.

Another example is the program of demonstration projects, under the direction of the Urban Mass Transportation Administration (UMTA). Under this program, the federal government pays at least two-thirds of the cost of projects designed to test new transit service concepts. In Chicago, the Skokie Swift rapid transit and O'Hare airport express bus line, which now carry about 9,000 passengers per weekday, are 2 notable examples of successful services that were begun as demonstration projects.

The Skokie Swift project developed and tested the concept of using a high-speed, 2-station, shuttle rapid transit line that travels into a light-density suburban area, with low-cost parking provided at the terminal. It operates nonstop over a 5-mile portion of former interurban railway, connecting with Chicago's main rapid transit line. The acceptance of this service was immediate and overwhelming. The project demonstrated the superior ability of rapid transit with wide station spacing and resultant high average speed to attract riders, as compared to the older concept of closely spaced stations, which put rapid transit within walking distance of more people but operated at average speeds too slow to make the service marketable. The Skokie Swift provides access to suburban job opportunities for many inner-city residents as well as transporting daily thousands of suburban commuters to the Chicago central business district.

The O'Hare express bus line, which connects Chicago's rapid transit system with O'Hare airport, has proved its worth by opening up airport jobs to inner-city residents and providing low-cost ground transportation to airline travelers and employees. The combination of travelers and employees using the O'Hare express has made it nearly self-supporting, allowing the Chicago Transit Authority (CTA) to operate the line, at premium fare, as part of its regular system.

Monitor-CTA is another type of UMTA-assisted research and development project, being concerned primarily with the generalized problem of improving the technology of supervision of motor-bus operation.

These examples show that progress is now being made in transit research and development. Nevertheless, much still remains to be done, and problems are yet to be resolved in this field.

Planning must be adequately tied to implementation; i.e., for the present, research and development resources should be used more for development than for pure research. Failure to be pragmatic in this judgment would result in downgrading the role of the planner and hindering the progress of research and development in transit.

An important job of research and development is that it must first categorize the type of research that is being done.

For example, if the goal of a research project is to make improvements within a conventional rail system in important areas such as noise and vibration, the project must be clearly defined as one designed to produce results within the context of a given existing technology, the rail system, with an eye to specifically how and when the improvements can be implemented. Similarly, if a research project is to be geared to improving the average speed and dependability of bus operation, the project should be well defined and categorized as one built around the technology of existing bus operation, with much concentration on the "how" and "when" of implementation.

On the other hand, perhaps our research should be exploratory or nonconventional, such as investigating the feasibility or application of new technologies to transit, which cannot be expected to produce immediate results. We must then recognize and define this to be the case from the beginning so that the research is not considered an unrealistic function having no relation to current situations.

For example, consider the TACV, a new transportation concept that has merit and is being studied as to its feasibility and applicability in future urban transportation systems. It is unrealistic to expect from TACV an immediate solution to the problems

of currently operating transit systems. A proposal to suggest TACV as an extension of an existing rail line, for example, would defeat the merit of the concept and make TACV itself sound unrealistic to transit operators and the public, whereas it may well be a sound concept when properly tested and then applied in the right situation.

The physical plant and equipment of the present CTA system have a reproduction value of more than $1 billion. This includes more than 90 miles of 2- to 4-track rail rapid transit right-of-way: subway, surface, expressway, median, and elevated structure. More than 4,000 buses and rapid transit cars serve about 1.2 million passengers per day. An existing system of this magnitude is in need of research and development that will lead to improvements compatible with the established operating plan and the present massive capital commitment.

Introduction of a completely new rapid transit technology in Chicago would require special justification. Its application would have to be on a line completely separated from the present system, or its advantages would have to be overwhelming, in terms of service or cost, to warrant its introduction into the CTA system.

Disadvantages to be overcome in introducing new technology include the need for separate maintenance, terminal facilities, and right-of-way, which might increase construction and operating costs. Equipment would not be interchangeable, complicating operation and requiring greater investment in spare rolling stock. Passengers might be inconvenienced if the number and difficulty of transfers were increased because the technology of an extension was not compatible with an existing main line. Connections between old and new lines would be more difficult to make because the same trackage might not be usable by both modes.

CTA is most interested in areas of research that will lead to improvements in its existing bus and rapid transit system, in important areas such as safety of operation, passenger security, cleanliness of facilities, speed and dependability of service, matching of routes and service to trip demand, aesthetics, and reduction in noise and air pollution. We are continually striving to better serve our 1.2 million daily passengers. We want to improve the attractiveness of our service to increase ridership.

Once we have identified needed areas of research, and performed the actual studies, we must then successfully apply our conclusions. The job of implementing new concepts is often the most difficult part of the research and development process—and this is especially true in transit.

For example, if research has revealed that certain measures will significantly reduce noise in the subway, but funds are not available for implementation, the research recommendations are unrealistic; i.e., they cannot be implemented.

Let us assume that research has shown that exclusive bus lanes on a street will cut bus travel time in half, speed the journeys of thousands of people each day, reduce operating costs, and make the service more attractive to those not now using transit. If influential businessmen along this street who do not realize that 90 percent of their customers use transit block the proposal because they fear it will hurt their business, our research has again stopped short of reality because the implementation phase has failed.

Transit research and development must continually involve political representatives if research and reality are to be worked together. They must be familiar with what is going on in research and development, what conclusions are being reached, and what beneficial programs are being recommended for implementation.

It is their understanding and support that will make the funding of needed projects possible. If worthwhile transit improvements are being opposed by special interest groups, only informed representatives will understand and support the improvements.

It is through political representatives that citizens must be made aware of the importance of programs beneficial to transit. A good example of where this worked well in another field was with the establishment of the National Aeronautical and Space Agency and its program. First, Congress was convinced of its importance and decided that it was needed. Consequently, this multibillion dollar program was launched, and the public was made aware of the program and its importance.

In Chicago, one of the biggest assets we at CTA have is the support and understanding of Mayor Daley, who recognizes the importance of a healthy urban transit system

to the vitality of a large city and is willing to support and fight to improve the CTA system. Transit planning and improvement are greatly hindered in cities where the mayor does not understand the importance of a strong transit system, or the need for public support to transit.

This backing is essential to our survival. Only with the Mayor's support has Chicago been able to construct the first 3 median strip rail rapid transit lines in the country. The first such line was opened in 1958 in the Eisenhower Expressway, and to date Chicago remains the only American city that operates rail rapid transit in expressway medians. But these lines have been a testimony to the efficiency of this concept, and plans call for a portion of the new BART system, which will serve the San Francisco Bay Area, to operate in an expressway median.

Within the last 3 years, $100 million worth of urgently needed rapid transit extensions and improvements, including the 2 newest median strip lines in the Dan Ryan and Kennedy Expressways, have been placed in operation. The city of Chicago provided the one-third local share for the capital cost of these projects through a general obligation bond issue, and the federal government paid two-thirds through UMTA. The operating costs of these new lines, however, are the responsibility of CTA.

For the past 23 years, CTA has operated its comprehensive system of local transit strictly from fare-box revenues. However, in an effort to minimize fare increases in the recent period of inflation, we have postponed needed equipment replacement and system modernization.

This year, through the support of Mayor Daley and the Chicago City Council, the Cook County Board, Governor Ogilvie, and the Illinois State Legislature, funds were provided by the state, city, and county so that CTA will be able to operate through most of 1972 without a fare increase. We at CTA are gratified by this development, as the effect of recent fare increases in diverting transit riders to private automobiles operating over subsidized highways is clearly evident to us.

Studies have shown that cities that have maintained low fares and high-quality service through subsidy have experienced less decline in transit patronage than cities that have not subsidized transit and that have kept fares compatible with rising operating costs.

The recent Illinois state legislation will also make possible a $120 million capital improvement program, which funds will help to replace worn-out rolling stock and renovate deteriorized facilities. This urgently needed program will greatly improve the CTA system for our present riders and should attract new ones. This program will be funded through federal capital grants, state bonds, and work performed by the CTA force. Important features of this program are 1,000 new buses and 100 new rapid transit cars. These vehicles will be air conditioned and will replace some buses more than 20 years old and some rapid transit cars nearly 50 years old, the oldest cars still operating in the United States. All CTA buses more than 15 years old will be replaced under this program.

All of these transit improvements for Chicago were made possible by informing the elected representatives at all levels of government of the importance of and the needs in the field of urban mass transit. Transit is on the road to recovery only because public funds are finally beginning to be made available on the scale that can begin to provide truly high-quality transit service.