service takes those passengers and incoming rail passengers to their destinations, and many-to-many service carries passengers with origins other than the rail rapid station. Throughout the evening individual vehicles shift among shuttle, scatter, and many-to-many services as needed.

The research and development program is identifying improved techniques for determining the most appropriate mixture of scheduling methods under various operating circumstances. These techniques can be expected to result in further improvements in the operation of DRT services. Quantification of the techniques will enable decisions to be incorporated into the computer system. These decisions will improve the ability of the computer system to support the operations manager, either by providing data needed by the manager to select the scheduling methods or by selecting the scheduling methods for review by the manager.

In summary, DRT fills a gap in current transit systems by providing effective and efficient suburban service. These services should be an integral part of a metropolitan transit system and should be closely coordinated with fixed-route, line-haul service. Such a coordinated system can provide comprehensive transit service between various suburban areas as well as between suburban areas and the central business district. Operating economies can be realized by combining DRT and fixed-route services. DRT provides better suburban service. Fixed-route drivers can be used on DRT vehicles in off-peak hours to reduce total system costs. Origin-destination data collected as a by-product of DRT operations, particularly computer-based operations, can contribute to a better use of vehicles and drivers in both types of services. Also, those data are useful in transit planning. The origin-destination data can replace information now collected in surveys, a major expense in transit planning studies.

A diversity of DRT scheduling methods have been identified. Research and development is in progress to determine the best combination of scheduling methods under a variety of operating circumstances. Identification and quantification of formal techniques to select scheduling methods will further improve the operating of transit systems.

Charles Boynton, Salt Lake City Taxicab Association

The International Taxicab Association is an association of taxicab owners and operators in the United States, Canada, and Mexico. During 1974 I was president of that association and gave to its members the message that is in this paper.

During the past few years, the taxicab industry has come a long way. A few first-order problems involving our industry, government, and consumers at all levels remain and must be resolved before we can make further progress.

The major issue facing the taxi industry today is clarifying its overall role in the urban passenger transportation system. If that were done, intelligent goals could be identified and more coherent policies developed. The issue is not just a taxi industry issue. We would be naive to assume that we could make this decision by ourselves. Urban planners, local governments, and federal agencies make decisions every day that affect what we do. They do not deliberately try to influence our future; as they carry out their legal and administrative duties, we are affected. Certainly the EPA clean air standards will have a major effect on us.

Clarifying the taxi industry's role is important because it has financial consequences to us and the communities we serve. It is also important because service standards are included, and thus the quality of transportation is affected. The future urban transportation system may have no taxis, nothing but taxis, or a certain number of taxis; each plan will create a different kind of situation.

I should like to discuss the urban public passenger transportation system, make a proposal, and ask for the help of others involved in solving urban transportation problems. Our industry has a duty to provide input to the solution of these problems, and we are trying to do just that.

CITIES SERVED

A carrier's importance to the market can be ascertained by examining the participation of the carrier in the whole market. If a carrier serves any particular market well, then that carrier is a power, but well-served individual segments do not prove that the whole can be well served. For example, PSA does a spectacular job in providing air service between most of the major cities in California. But, based on that example, one cannot conclude that air service is excellent throughout the United States. One would be equally silly to examine just United, American, or Delta and conclude that air service is adequate. All the services must be examined.

The same principle applies in the examination of urban carrier services. One cannot look at certain cities and equate transportation adequacy in those cities with transportation adequacy in all cities. A multiplicity of services must be examined.

I know that taxis are a major element in the urban transportation system, even though others may not agree. Here are some facts. Taxicabs serve more than 3,400 communities; rail rapid transit serves only 7 cities (although they are all large ones), and bus transit serves 1,023 cities, of which 185 now have public transit services. Rail and bus services are vitally important, but taxicab services are more widespread. There are more than 170,000 taxicabs that carry more than 2.4 billion passengers a year. Taxicabs serve 27 percent of all passengers included in bus, rail, taxi, and commuter services. How is it then that we still have such a low profile? Except for the U. S. Department of Transportation and its Urban Mass Transportation Administration, why do most government agencies think of cabs as being unimportant, useless, and wasteful? Instead of being the first public transportation service called when a need arises, we are often the last. Part of the problem lies with the industry, but most of it lies with government agencies.

PEOPLE SERVED

When urban passenger trips by bus, rail, and taxi are combined, one can estimate the size of the urban public passenger transportation market. Nationally, taxicabs carry more than 27 percent of that market, but a recent study in Dade County, Florida, revealed that taxis carried 11 to 13 percent of public passenger trips. In Salt Lake City, 15 to 20 percent of such trips are made in taxis, depending on the weather and time of year.

Most recent studies I have seen show a positive correlation between all urban public passenger trips and taxi trips. If there are, say, 10 million trips, then taxis would serve 1 to 2 million of them. The point is, the people we serve are the same people that other public transportation modes serve. They are people who, for one reason or another, do not use automobiles. For a long time taxis have been considered to be the mode of the rich and the tourists. We do serve some of that market just as buses and rail rapid transit do. But, an examination of a typical taxi trip sheet will show that most of our customers rely on taxis as a public transportation service that they need. They have no other way to get around. The reason we are out there is to provide a public not a private transportation service.

APPARENT BEST USES

In providing urban transportation service a fair question then is, What is the best use of rail, buses, and taxis? Rail, although the least flexible, is probably the most efficient for carrying large numbers of people going from one point to another. Bus is more flexible and more efficient for carrying many people going from one area to another. Taxi is by far the most flexible and most efficient for demand-responsive service. Any good urban system requires at least 2 of the 3 suppliers, one of which must be taxi. It is difficult to imagine having only rail rapid transit and nothing else at its ends to accumulate and disperse the passengers. It is difficult to imagine having

a transportation network that offers only bus service. It is not too difficult, however, to imagine having only taxi service. Those 3,400 communities attest to that right now!

In the past, emphasis has been placed on fixed-rail systems. But cities now do not want fixed-rail systems, and for good reasons. Tearing up a city core for 10 years while track is laid underground to obtain a system with a useful life of, say, 40 to 50 years is nonsense. Everyone suffers for a long time with little reason, and then the funding responsibility is passed on to the next generation.

Creating just a bus system may not be the answer in certain cities either. There are practical size limitations to buses, even though newer buses can carry nearly 100 people. But, if distances are great, then overall rate of charge must be a high-priority consideration and the system that has the best ratio of passengers to operators will be favored. This approach gives the best rate at the cost of service, but in some instances rate of charge must be the sole guide. Chartered airplanes became the prime supplier of service across the Atlantic because some air carriers, such as Pan American, did not pay enough attention to rate versus service.

Los Angeles has a tremendous freeway system, which allows citizens to live scattered out like leaves on the wind. Until quite recently, it had virtually no downtown. If I lived there, I would not vote to build a fixed-guideway system. However, the BART system in the San Francisco-Oakland area makes sense. (I do know, though, that we could not affort to build another BART at today's costs.) Where population is concentrated and the transportation patterns are easily predictable, fixed guideways work. For most areas, though, buses moving people along the lines and taxis accumulating and dispersing passengers on the ends makes more sense. Shared use of the taxi, call it dial-a-ride, dial-a-bus, or cab pooling, in concert with buses is the best short-range solution to urban transportation problems. It may also be the best long-range solution, provided that combination continues to offer flexibility at favorable overall cost.

SUBSIDIZING TRANSPORTATION

The country has agreed that it will support the cost of getting a public passenger transportation system in operation through a subsidy to the company that does it. The recent transportation assistance act, which makes available $11.8 billion to finance capital and operating deficits, suggests how strong the support is. Many argue we are not doing enough and that $9 to $19 billion more are needed. The case is clear. Because current transit services cannot pay their way and because they are essential, the public pay the deficit.

The subsidy question has placed emphasis on coordinating transportation systems. When huge sums are conscripted, bickering will inevitably occur among those who are going to participate. The recent merging of the bus and rail lobbying groups into one unit, the American Public Transit Association, is typical of the recognition that the whole realm of public passenger transportation service should be coordinated under one roof. The job of coordination of research, demonstration grants, subsidies, and capital grants has fallen into the capable arms of the Urban Mass Transportation Administration. That agency, which has worked diligently with our taxicab association, has caused a lot of good things to happen. The federal government has become more evenhanded in its treatment of participants involved in solving the transit problem. Local governments making requests for money are required to be more responsible. It has encouraged an atmosphere of innovative thinking in hard-goods suppliers, and better tools are being built daily. It has pushed other branches of government into breaking down barriers to providing necessary services. Most important, it has raised awareness of the scope of the problem and has caused positive attitudes to be engendered on the question of financial help to distressed but vital people carriers. The whole picture of urban public passenger transportation has changed and become more challenging. This helps to draw more attention to the field and speeds up the pace of system development. The growth of knowledge about urban people transportation problems has been geometric. Linear induction motors, articulated buses, diversified-use vehicles, automatic vehicle

locator systems, and personal rapid transit with 20- to 30-second headways are all fairly recent accomplishments.

In sum, the country has recognized as a public duty the creating of flexible public passenger transportation systems and has taken on the coincidental responsibility of making performance live up to expectations. Capital grants and fare subsidies have made it possible.

FUEL CRISIS

The shortage of fuel is not a U.S. problem that can be eliminated by politicians verbally attacking oil distribution companies. This is a worldwide problem. World economic systems are crippled to the point of crumbling when the gas valve is shut off. A worldwide monetary crisis has been heightened by the fuel problem, and the money redistribution problem has already caused bank failures on the order that we have not seen for 40 years. Small developing countries have absolutely no way to pay for their fuel needs. And, the oil exporting countries have no way to use up all the money they are getting for their products. I could go on, but the point is this: The taxi industry knows as much about the fuel problem as anyone around. Its conservation programs played an important role in fuel conservation in the past and will play an even bigger role in the future. A major reason taxis were designated as essential users of gasoline was that taxis use it frugally.

The continuing fuel problem will cause a reconsideration of the value of the private passenger car. There simply must be some clear-headed thinking about the true overall cost of private passenger cars. When there is, it will be clear that we must use less private passenger cars and more public passenger systems.

SERVICE

In one area of providing public transportation, particularly, taxis have an unusual responsibility. If any segment of the urban ground transportation network can solve the transportation problems of the old, the young, and the physically and mentally handicapped, it is the taxi segment. In fact, this area of need can only be met by taxi service. Many taxi companies are already providing this service. Many cities already have programs that are imaginative and meet the need. But high fares as compared to an ability to pay for this service are becoming more of a problem. Some who are in the group I described cannot afford taxis and must somehow have their rides subsidized. The method could be transportation stamps as are being tried in West Virginia. The solution is not in creating another urban transportation system but in using the ones we have right now. But we should subsidize the rider and not the company providing the service.

TAXES

Taxi companies pay fuel taxes and transit authorities do not. We are expected to provide services, like bus and rail, but operate under different guidelines. The taxi industry is trying to make its contribution to the urban transportation mix, but it is thus handicapped. We are doing a good job in many respects, but we are not filling our role as completely or as fast as we should.

MONEY

Why don't we? Money! Although we have many examples of profitable taxi enterprises that are meeting the public need, the majority of the industry is in money trouble because of antiquated laws, rates of charge, lag costs, and inflation. Interest rates are

so far out of sight for our industry that it scares me to talk about it. The possibility of credit allocation does not encourage me either. If a taxi company is not in the best financial condition, it will not be able to borrow money for equipment purchases. And all of this occurs while we subsidize public transit. The taxi industry, taken as a whole, is on the ropes, and if the industry fails who will provide service to those 3,400 communities that depend on taxi service?

We cannot solve the problem by rate alone. As we increase rates, we lose trips. A study of the Miami area showed that, as rates for taxis were raised relative to rates for buses, trips were lost on a 1 to 3 ratio. My studies of the taxi industry indicate a range of ratios of trips lost to rate of increase from 4 to 1 to a low of ½ to 1. At that rate of trip loss, within a few years, some of us will run only 10 trips a day and the average rate will be $500 per trip.

We need subsidies now. Let me state emphatically that not all portions of all taxi services require subsidy but state equally emphatically that some portions of some taxi services do! Here are some of our needs.

Equipment Replacement

Depreciation reserves are not meeting replacement costs. Tax credits are useful, and some sort of inflationary bias in depreciation accounts in the future would be helpful. In the short run, capital does not exist to replace equipment much less to expand services!

Research and Design of Vehicles

It is clear that the traditional size and shape of cars are not right for the requirements being placed on taxis. Taxis are put to many uses, and innovation must occur in the vehicle design. The demand for a different kind of vehicle is moving faster than the supply in this case, and we need to spend money to develop a new vehicle for the future.

Increased Productivity Through Better Equipment Utilization

If we could increase our utility marginally, we could increase our productivity tremendously! Better efficiency means better rates ultimately. A significant contribution could be made if we knew vehicle use, status, and location better and faster. Two-way radio is the primary tool of the industry in determining status and location, but 2-way radio is not enough! Radio and computer technology exists by which location can be pinpointed and status revealed by the push of a button. The problem is we cannot afford it! If we could dovetail the status-location part of our business with the dispatching part, within a year we could come up with automatic identification-dispatch systems that would increase productivity 20 to 30 percent. A side effect of such a sophisticated system would be improved fuel to trip ratios.

Better Taxi Regulating Ordinances

Most of the cities in this country control taxi services under old and tired ordinances. Some of the major cities even disallow shared riding! Cumbersome rate and service standards stop any experimentation on the part of the taxi industry. The industry and government need to examine the whole area of taxi regulation and spend some time doing it.

Subsidized Rides

We need money to carry passengers who need taxi service but cannot afford it on a continuing basis. There is no other realistic way to solve the problem of transportation for some people other than to subsidize taxi rides. Positive attitudes could be expected from most taxi operators toward reduced charges for this type of service, for its overall impact would be reflected in greater productivity of the taxi. There are contracts right now under which high utility is achieved and resultant rate reductions of 10 to 20 percent are passed on to the user. There is nothing secret or unusual about this apparent rate differential. Many of us in the taxi industry would like to see rates much lower than they are, but not all rates can be decreased.

Change of Legal Status

If we were to receive money help on a continuing basis from local or federal sources, we would need to change our legal status somewhat. Many of us have had unfortunate experiences so many times with government bureaus that we would just as soon not be any closer to any government unit than we absolutely have to be. I think, however, that any attitude that reveals a reluctance to hold hands with government must change if we are to survive as an industry.

At the same time, a consistent approach to the taxi industry by the National Labor Relations Board, the Department of Treasury, and the Department of Labor would do wonders for our mutual confidence levels. Past inequities must be eliminated to allow us to operate more publicly in the future. We can do more in the urban passenger transportation area if we are treated as proper citizens of communities. We are not a bunch of gorillas who must be caged, even though we recognize that in a few problem cities we have some companies that operate by the rule of the jungle.

If our legal status is changed, we must not be deprived of the values we have built. And, we must be able to build private values while providing public service. There is no conflict of interest when TWA is paid a fair rate per ton-mile for mail cartage on the same plane that carries passengers who, by paying a different fare, create equities in the company. It is not inconsistent that a trucking company carries steel for private agencies and mail for the government. The same principles should apply to taxis, except here we are talking about carrying people. To provide partial public service should not require that the provider be publicly owned. Adequate administrative agreements could ensure that public money be properly handled. Profit making and providing public service can work hand in hand. Better urban public passenger transportation through use of taxis can occur if that concept is recognized.

A PROPOSAL

I propose, then, that our industry and UMTA have frank and open discussions to find a way (a) to allow us to be eligible for capital grants for equipment such as I have described and (b) to assist through subsidization particular groups of riders who use our service. The discussions should center on a few areas initially.

The first is finance. Our industry cannot finance the service that will be required of it in the future. There are consequences both to the public and to the agency when a private agency is given partial public support. The question of the possibility of the public subsidy accruing to the economic benefit of taxi company owners must be answered before any money is allocated.

The second area is service standards. Obvious questions such as priority of service could be discussed, and future system design should be improved correspondingly. Unrealistically high service standards benefit no one. Standards should recognize that different cities require different services. Certain commonalities exist among cities, and the most usual one is the inadequacy of urban public transportation. Perhaps the

Amtrak approach could be applied at a company level, wherein some taxi services would be public while others would not be.

The third area is the entry-exit problem. Free entry into the taxi industry is still not in the best interest of the public. Discussions should consider the matter of allowing free entry if compensation is paid to old carriers for past service or of controlling exit of the market by requiring forfeiture of large bonded sums.

Fourth, consideration should be given to equitable and consistent rate-making policies, which do not currently exist in many communities.

I believe that open discussions of these topics will lead to actions that will provide some kind of subsidy to taxi companies.

This proposal was made at our recent convention, and the directors of our association approved its intent on October 30, 1974. Now the question is, Should the federal government favor public subsidy to the taxi industry and work toward that end? I think it should!