once the service attributes and the operating environment of paratransit become better known.

In a recent article, paratransit was called "the forgotten alternative." I wonder whether this description is still appropriate. Certainly, we in UMTA do not consider paratransit to have been ignored. Our capital grants and demonstration programs reflect our growing respect for this form of transportation. We are making sure that the full range of paratransit options is being explored. These include the so-called hail or phone alternatives, such as the dial-a-ride and the jitney; the prearranged ride-sharing alternatives, such as the car pool and the subscription bus; and the hire-and-drive alternatives, such as the short-term rental car. Each category has certain unique attributes, and each deserves serious consideration.

Of late there has been quite a bit of talk about how jitneys might prove to be the answer to all our transportation ills. Critiques have been written and studies have been commissioned purporting to demonstrate conclusively that jitney transportation can do the job and do it better and more efficiently than any other mode. This view, it seems to me, is but another manifestation of that old human reaction in the face of complexity—a yearning for easy answers, a harking back to simple solutions in a world that is anything but simple. I will be the first to admit that paratransit has a rightful role to play in the total urban transportation system—a role that has been until now probably considerably underestimated.

But to go on from there to imply—as some are doing—that jitneys are going to solve all our transportation problems is a giant step into the world of unreality. Single-mode transportation systems, except in small communities, are a mirage. An all-jitney system in a place like the San Francisco Bay Area or even in Oakland itself is no more realistic than an all-rail or an all-freeway or an all-PRT system.

I would urge all of us to exercise a bit more restraint in our rhetoric, lest paratransit, a form of transportation that shows genuine promise, become embroiled in a false controversy about the "ultimate transportation solution"—a debate that could do a disservice to all those who are genuinely committed to the cause of paratransit.

Robert H. McManus, Associate Administrator for Transit Planning, Urban Mass Transportation Administration

We have been reconceptualizing the Service and Methods Demonstration Program since an UMTA reorganization in 1973. It may be useful to put the demonstration program in a somewhat broader perspective before a description of it is given.

UMTA now has legislative authority for a program to financially assist transit operating costs. The range of activities encompassed by our program authority includes research, development, and demonstrations; capital grants and loans; planning grants; university research and training; managerial training; and operations.

Sometimes exaggerated claims are made for federal programs. For example, at the hearings on the Urban Mass Transportation Assistance Act of 1970, which essentially provided a quantum increase in resources for capital grants, a prominent witness said that this piece of legislation alone would alleviate traffic congestion and air pollution, increase property values, promote business activity, stop community decay, and ensure access to jobs, schools, medical care, and recreation for millions who were too old, young, poor, or handicapped to drive cars. The political process happens to be quite tolerant of such statements. After all, there is the hope that they will turn out to be correct, and the problems will in fact be solved.

The truth is that the politician is willing to accept limited results. He recognizes instantly when the expert is being clear, and when he is babbling. Though he is not averse to putting a program on trial for its life, if it falls short of initial expectations he is more apt to want to know why, and what it will take to get results.

The program manager has the interesting job of balancing political relevance and technical credibility. Statements of purpose have to acknowledge the perceived prob-

lems, such as congestion, environmental concerns, and social equity. But in attempting to approximate broad purposes with the available tools, the program manager is also subject to the judgment of his or her peers and must remain credible. If not, he or she gets done in because it turns out that all the politicians are not elected. Some of them work for universities or are consultants and what not and are quite adroit, if not mischievous, in affecting the life of the program manager in the political process.

Sometimes the technical world itself overburdens a program with expectations to produce various effects, when in fact the program manager through published guidelines has been careful not to overreach. This has happened to our capital grant program with respect to external effects such as urban development patterns and environmental improvements. We have only said that, when such goals are clear and dominant in local planning, the capital grant program can assist in implementing a transit-oriented development strategy to substantially improve the amenities of urban living. The dominance of such goals would be manifested in particular by actions that clearly favor the transit mode and are the exclusive province of local authorities, for example, bold use of the powers of traffic management, pricing, and land use control. Such use is in fact encouraged by the priorities established for making grants. Despite misunderstandings, this is one example of trying to be politically relevant as well as technically credible in the sense of devising an operational basis for performance.

The demonstration program is another case in point. I shall use the term "service and methods demonstrations" to characterize that part of the demonstration program exclusive of demonstrations related to technology development (hardware components and systems). The term subsumes activities identified in the past as service development, intermodal integration, corridor demonstrations, and others. The purpose of the program is to bring about the imaginative use of traffic management and marketing techniques, pricing, service variations, and technology to attain clearly described objectives. We consider the elements of the subsumed activities such as intermodal integration (i.e., integration of institutional, operational, and physical aspects of urban transportation) to be quite important. However, they do not provide an easily understood basis for structuring, explaining, and carrying out a program plan. Conferences with candidate demonstration cities under the intermodal integration program revealed that they were considering service improvements, fare variations, and methods changes, but not in ways to gain leverage on meaningful objectives.

As a digression, I am impressed in general that local authorities, though interested in research, development, and demonstration, tend to have an interest in specific projects that they perceive as a service to the community or to a resident industry or institution or as a source of prestige useful in economic development of the area. They are not apt to be primarily interested in the research design of a project or the transferability of outputs to other places. Furthermore, political reprisals for failure are a severe constraint to innovation at the local level. Negative results, useful and constructive in an organized research and development program, are not well understood in local affairs. This means essentially that a demand-responsive posture for demonstration program management (i.e., one responsive to applications from local governments) is not apt to be fruitful. It also means that we cannot always have our own way. To organize truly meaningful demonstration projects in the context of our federal system of government is just plain difficult.

In any case, we are now working with a number of cities involved in the earlier intermodal integration effort to achieve a better definition of their demonstration projects. A prime consideration in attempting to increase the effectiveness of our total demonstration effort has been to identify objectives that are clearly attainable by virtue of actions taken as part of the demonstrations, independent of exogenous actions. By this criterion, certain politically relevant objectives were judged to be nonoperational, for example, conserving energy, reducing air and noise pollution, and improving urban design and the quality of life in the community. Attempts might be made to describe such effects in demonstration cities, but it would be difficult to impute causation. (The chances of being able to describe such effects could be enhanced, however, if a demonstration site also happened to have, for example, a severe air pollution problem.) On the basis of their being operational, technically credible, and supportive of the more

rhetorical objectives cited above, the following objectives were selected for program planning purposes:

1. Reduce travel time for transit users,
2. Increase coverage of transit service,
3. Improve reliability of transit service,
4. Improve transit vehicle system productivity,
5. Improve transit service for the elderly and handicapped,
6. Increase convenience of using transit, and
7. Reduce congestion.

The last objective may be border line with respect to "doability," but we have in mind the possible use of congestion pricing, automobile-restricted zones, public automobile rental systems, and similar devices to make the attempt. These concepts are being studied in the current fiscal year for possible use in a subsequent year.

Simultaneously with identifying the operational objectives of the program, we had to come to grips with its underlying purpose. Was it actively to induce change and diffuse innovation or to build a knowledge base and be more passive with respect to a change-agent role? We concluded that both elements had to be present and that the percentage of the resource allocated to each role would vary from year to year.

In considering whether to opt for a change-agent element, I was impressed with the time lag required for widespread adoption of new ideas. In the education field, for example, the average American school lags 25 years behind the best practice—the diffusion of ideas being much slower than in farming and medical practice. The lack of change agents was cited as a likely factor as was the lack of an economic incentive to adopt. Well, how about the transit field?

To implement the change-agent role, we are establishing a category of demonstrations termed "exemplary" demonstrations. They will focus on providing a means for getting a person from his or her origin to a desired destination as quickly, efficiently, and comfortably as possible. In most cases this will require a combination of techniques and modes working together to provide a variety of services for various users, trip purposes, and routes. These projects will provide specific examples of how immediate transit service improvements can be attained and will be designed to make the techniques used and the information obtained transferable to other locations. There will also be turnover in the case load of such exemplary demonstrations for the purpose of positively inducing change in as many places as possible. In essence, these are demonstrations that have a high likelihood of success and that use methods and techniques already tested to a reasonable degree (though not in the same combinations) on an experimental basis.

To expand the knowledge base, we are establishing an experimental demonstration category. Since the experimental demonstrations are, in essence, the research for the exemplary category, they may encompass a broader range of objectives than those cited earlier. The experiments will tend to focus on specific questions or on particular services rather than to adopt the more comprehensive service philosophy of the exemplary demonstrations.

To develop the basis for experimental demonstrations, we will use a part of the resource for analytical studies. For example, attitudinal surveys may be conducted to increase understanding of how results from questionnaires, administered before system implementation, correlate with actual public acceptance of a service. Increased knowledge of these relations could prove invaluable in designing potential new services and in determining areas for their application. In other cases, the analyses might be feasibility studies to investigate the potential for implementation of an experimental demonstration or evaluations of demonstrations funded by various sources.

We have a number of studies in progress or about to begin, among them an analysis by the International Taxicab Association of regulatory impediments to the more efficient and varied use of that mode.

Examples of projects of an experimental nature are demonstrations of innovative fare collection and billing systems (e.g., using credit cards), automated transit infor-

mation systems, integrated fare structures for multiple transit operators with appropriate revenue-sharing formulas, differential pricing of transportation supply through taxes and tolls, limitation of access to certain parts of the urban area or to specific facilities by licensing or prohibition, and modification of travel demand periods by alteration of working hours.

With respect to resource allocation, approximately 80 percent of the 1975 program level is accounted for by the exemplary demonstration category and 20 percent by the experimental. The 1974 program level for these demonstrations was $16.25 million. In 1976, perhaps 60 percent will be used for the exemplary category and 40 percent for the experimental on the theory that more experimental demonstrations designed in 1975 will be operational in 1976. As results are proved, the desired practice will be diffused through the exemplary category, and commensurate changes will be made in the program proportions.

The 2 categories will be managed quite differently; the exemplary requires a significant local share (perhaps 50 percent when averaged over the term of the project), a specific schedule for federal disengagement, and a local commitment to continuation of the practice. Resources of the capital grant program will also be brought into play so that the effective program level could well be a factor of 2 or more times the appropriation for the demonstrations per se.

The experimental demonstrations will not have the constraints just described, nor can capital grant program resources be used unless the likelihood of continued use of the physical assets is apparent. Physical assets can indeed be acquired, but they will have to be financed by the demonstration program resource.

For both types of demonstrations, UMTA will put together the project designs and assume responsibility and the full cost for evaluations. There will, of course, be collaboration with demonstration sponsors, who will be responsible for actual data collection. We hope to avoid inconsistency in data from project to project and problems such as the simultaneous changing of too many variables in the course of the demonstrations—commonly known faults of earlier projects.

For the time being, we intend to concentrate on service demonstrations rather than transit-pricing (i.e., fare variation) projects. We are not against fare variations, but we simply do not want to support them with this program resource at this time. Our reasons are, in brief, that informed opinion at least justifies the hunch that demand is more responsive to service level than to fare level. In addition, we could easily consume our scarce program resources in even fewer projects than we currently plan, for fare variation projects are costly. We hope to segregate markets better through research currently in progress and then address fare policies more discretely.

Let me return to our objectives and at least for some of them cite techniques that seem to promise success. Time does not permit review of complete project concepts. To recapitulate, the principal objectives relate to time, coverage, reliability, productivity, and service to the elderly and handicapped.

The truth is that in actual practice the objectives and their supporting techniques will run together, particularly as a demonstration may become more comprehensive in scope. Certainly the objectives of reducing travel time for transit users and increasing the coverage of transit tend to run together. Time reduction can be accomplished through increased service frequency, decreased number of and time involved in transfers, and increased vehicle speeds. We want to concentrate especially on minimizing time spent outside the vehicle.

Expanded transit coverage provides and requires a choice of transportation modes and increases the flexibility and efficiency of urban travel and service to those who do not have an alternative mode. Another pair of objectives are improving the reliability of transit service and improving transit vehicle productivity. Techniques that can serve these objectives include segregating transit vehicles from other traffic; monitoring vehicle location, progress, and status; improving routing and scheduling; and upgrading the quality of maintenance.

I particularly want to comment on the objective of improving transit service for the elderly and handicapped. We are initiating a rule-making action on our approach to this purpose in the UMTA programs, and my opinion is that the demonstration program will

in the end win the day with appropriate answers for communities of various sizes. Up to now, service development projects have produced a variety of models in the categories of cost-sharing arrangements, service concepts, and equipment design, providing easy ingress and egress.

There is a need to attempt demonstrations built on incentives to providers of transportation service rather than just on needs of special user groups to see what service responses might be induced. Variations could include a special service subsidy to a conventional transit system modified to accommodate needs of the aged and handicapped, taxi driver premiums, and transportation stamps in the possession of the user and redeemable at a premium by the provider of the service, irrespective of the mode. We also have ascertained that the size and the nature of the information program needed to serve adequately special user groups have been misjudged and should be further addressed. And the subject of vehicle modifications also needs more attention.

Perhaps this gives a general impression of what we have in mind for the service and methods demonstration program. However, I want to be as clear as possible about the respective roles of the various UMTA offices in conducting demonstrations. Three offices have a piece of the action: the Office of Research and Development, which emphasizes technology development (in particular, hardware components and systems); the Office of Transit Management, which concentrates on marketing and managerial efficiency; and my own shop, which concentrates on service concepts, traffic management, pricing techniques, and managing the planning grant program, which I have not mentioned.

The bailiwick of the Office of Research and Development is relatively clear; its demonstrations relate specifically to testing and perfecting technology. There may, nevertheless, be times when final development of a system or components may be completed in a demonstration managed by my office—when such development is subordinate to a primary objective such as reducing travel time. An example might be a demonstration of waterborne transit.

The line of demarcation between the Office of Transit Management and my office is not so precise, but we expect the Office of Transit Management to be most active in projects related to the objectives of improving transit system productivity, schedule reliability, and convenience of using transit. We would also look to that office for a major role in information dissemination to our transit operator constituency.

The demonstration resource, employed as just outlined and in conjunction with other UMTA programs, offers these major possibilities:

1. Identification of vanguard practices for emulation and diffusion of best practices through a change-agent role by collaterally using the planning assistance program as a resource to help a much larger number of cities evaluate promising new ideas, undertaking the early planning for demonstrations, and ultimately possibly using an operating assistance resource to ease the transition to fully established improvements;
2. Development of service standards and determination of costs to meet them; and
3. Possible simulation of service levels of advanced technologies (e.g., dual mode) by using available systems, or, failing that, establishing service levels approximating those of advanced technologies to judge the merits of incurring the incremental costs to achieve the higher service levels.