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# Paratransit: Options for the Future

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## An Overview

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NOTE: This report is one of a series commissioned to assess future options for the evolution of paratransit. Part of its content includes policy and other recommendations based upon this contractor's perception of the issues involved. Recognizing that there may be many alternative approaches to resolving transportation problems, these positions may not necessarily reflect those of the U. S. Government. As such, no endorsement of these recommendations is either expressed or implied by the U. S. Department of Transportation.

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# Paratransit: Options for the Future

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## The Overview Report

Final Report  
December 1982

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Prepared for  
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# 1 *The State-of-the-Art*

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## *Introduction: Paratransit as Controversy*

Paratransit - the "family" of transportation services between the private drive-alone auto and fixed route transit - is a concept which formally emerged in the early 1970's. Much has occurred since the seminal UMTA-sponsored Urban Institute study - Paratransit: Neglected Options for Urban Mobility (1) - popularized the term and the concept around 1975. However, despite the fact that paratransit is no longer a neglected option, there is still considerable controversy regarding what paratransit is and what it might accomplish. On one extreme, some proponents of paratransit view it as a virtual panacea for our transportation ills. At the other extreme, paratransit is viewed as an expensive, energy-inefficient set of modes with limited market potential. One view of paratransit sees it as a set of modes competing with conventional transit services and the auto; the other view sees paratransit as a uniquely complementary service. Flexible paratransit services are considered by some to be contributors to sprawl; the same characteristics of paratransit are considered by others to be responding to market needs.

The controversy surrounding paratransit can be traced to a number of key factors. The first is the fact that the paratransit mantle covers a broad range of services, and different persons may be referring to totally different services when using the term paratransit. Unfortunately, paratransit services have often been naively perceived in a narrow discrete manner, rather than as a broad continuum of options. To some casual observers, paratransit is perceived as dial-a-ride, while to others it is vanpooling. A premature fixation on a specific paratransit concept can lead to incorrect generalizations. Dial-a-ride is but one type of a range of demand-responsive services. These services differ significantly with respect to cost and level of service. Similarly, vanpooling is one type of ridesharing service. Other ridesharing concepts, such as carpooling, are generically similar, but provide very different service characteristics and market opportunities.

Second, although many paratransit services have been around for a long time, paratransit really represents a fundamental change in the way public transit services are planned, implemented, and operated. As could be

expected, many organizations representing established transportation providers initially saw paratransit services as a threat. Now, however, many of these same organizations have come to view paratransit as an opportunity, though only if operated by themselves. An example of this is seen in the International Taxicab Association, which initially objected to paratransit, but now views all taxi service as paratransit, with shared-ride service a logical, desirable extension to conventional service - one which should be operated by the taxi industry.

A third factor is the range of success of paratransit services. For every successful example, there is an equally unsuccessful example of a similar service concept. One's overall opinion of paratransit is clearly tied to the nature of the experience with which one is familiar.

Given the inherent diversity of service options and actors involved in paratransit, it is unrealistic to expect to mitigate the controversy with any single study. Nevertheless, the study summarized in this Overview - Paratransit: Options for the Future - attempts to answer some of the fundamental questions surrounding paratransit. This study, undertaken for UMTA's Office of Policy Research, looks at the nature of paratransit services, the evolution of the concept and experiences to-date, the state-of-the-art, and possible future directions for the various service concepts.

The overall study is divided into six stand-alone volumes, each addressing a specific segment or market area of paratransit: Paratransit for the Work Trip - Commuter Ridesharing; Paratransit for the Transportation Handicapped; General Community Paratransit (in Urban Areas); Paratransit in Rural Areas; The European Paratransit Experience; and the Overview.

## ***Defining Paratransit***

### What is Paratransit?

Paratransit has been most commonly defined as the "family of transportation services which falls between the single occupant (owner/driver) automobile and fixed route transit."(2) Fixed route facilities operate in finitely defined time and space - with little privacy and few amenities - use paid professional labor, and generally involve public ownership of the capital facilities. The automobile operates in variable time and space - with complete privacy and significant amenities - has no paid labor and generally involves privately-

owned capital equipment. Paratransit services fall, in various combinations of factors, between these extremes. For example, vanpools typically have no paid labor, but the vehicles may or may not be owned by private individuals, and the degree of privacy is significantly lower than that of the single occupant auto. Dial-a-ride services use paid professional labor, but may or may not involve public ownership of vehicles, and generally do not involve fixed routes and schedules.

Thus far, this definition appears fairly clearcut. However, difficulties arise as paratransit concepts move toward the extremes. For example, when does "carpooling" cease being private auto and start becoming paratransit? One might readily accept that a carpool of persons who did not know each other and which was arranged by a "third-party" ridesharing agency is paratransit, but what about a carpool consisting of husband and wife? Similarly, is a fixed route minibuss service operated by a shopping center developer a form of transit or paratransit?

It is questions such as these that have led different experts to label as paratransit different combinations of services. For example, the UMTA-sponsored Urban Institute study treated taxis as a form of paratransit, while UMTA explicitly excludes exclusive-ride (single occupant) taxi from its definitions of mass transit and paratransit. The Urban Institute study also included rental cars as a paratransit mode, since they do not involve owner-driven vehicles. However, traditional auto rental (which is oriented to business travel away from home) differs from the private auto only in terms of ownership of the vehicle, and, hence, is difficult to view as a fundamentally different concept. School bus service is another good example, treated by some as a form of buspooling, and by others as a totally separate mode.

There is no right or wrong definition of what constitutes paratransit. Taxi, car rental, and school bus service are all forms of paratransit in its broadest sense, since they do fall between the extremes presented in the common definition. Where they differ from other modes more traditionally thought of as paratransit is that they do not represent a fundamentally new and innovative set of options. In any case, paratransit as a unifying concept represents more than the sum of its parts.

To understand this, it is important to understand how paratransit services differ from the extremes of the spectrum of transportation services.



Paratransit differs from conventional transit in a number of key ways besides the nature of the service itself (i.e., fixed vs. flexible route). First, conventional transit planning tends to be corridor-oriented. In contrast, paratransit services are typically planned to serve sub-areas, or even single activity centers. While transit services are typically aimed at a mass market, paratransit may be targeted at a very specific market. Transit planning tends to be carried out on a regional level by a regional planning agency, while paratransit may be planned by any number of different groups (or individuals, for that matter). Furthermore, while conventional transit is usually operated by a region-wide public agency, paratransit may be operated by any of a number of different providers, including private operators, public operators, activity centers, and individuals. The growth of paratransit has expanded the ways in which public transportation services are developed, provided, and perceived.

At the other extreme, paratransit differs from the single occupant auto in a number of key ways. First and foremost, paratransit services make more efficient use of resources. Typically, this involves some element of ridesharing; however, there may be circumstances under which paratransit may involve single occupant autos. This would occur if the paratransit option made more efficient use of autos through joint ownership, and, by explicitly pointing out the true marginal cost of auto travel, also encouraged the use of more energy-efficient modes. Short-term auto rental schemes would be classified as paratransit under this definition. It is clear that the distinction between the private auto and paratransit is somewhat blurred. In fact, paratransit can be thought of as bridging the gap between private and public transportation modes.

The key point to be made is that the paratransit concept is one which does not involve a fixation on any single service type or provider. Paratransit moves away from a preoccupation with automobile/transit competition towards a focus on the complementary nature of automobiles and transit in an overall transportation network. Paratransit services are designed to meet specific market needs in the most effective way possible. This involves the utilization of the automobile and of transit, of public and private operators, of individual travellers and of activity centers that generate the need to travel. In an ideal setting, all of these actors and facilities would be fused together into an overall transportation system. Paratransit, as the

central concept behind this approach, is therefore fundamentally different from the conventional transportation planning practiced throughout much of the 1960's and 1970's.

### Classifying Paratransit

For the purposes of this study, a somewhat restrictive view of paratransit was taken, such that certain traditional service concepts, including exclusive-ride taxi, car rental, and school bus, were not addressed. However, that still leaves a wide range of service types that fall under the paratransit umbrella.

To help structure the study and report, it was felt to be important to attempt to classify paratransit services. Unfortunately, the problems introduced by defining paratransit are compounded by attempts to categorize such services. For example, the Urban Institute distinguished between: "hail or phone services," such as dial-a-ride or shared-ride taxi; "hire and drive services," such as car rental; and "pre-arranged ride-sharing services," such as carpooling. The authors pointed out, however, that the very nature of paratransit as a set of flexible modes makes it very difficult to categorize. For example, a shared-ride taxi service might involve both on-demand and pre-arranged (subscription) shared-ride service.

In fact, one could choose to classify paratransit services in any of a number of ways. In doing so, however, one should be careful not to let the exercise obscure the real objective. Classifying paratransit services is basically a tool to simplify the process of analyzing them. Worrying about how to classify services should not overshadow the assessment of their impacts. Since this report focuses on developing an understanding of the environment surrounding paratransit, rather than on a technical analysis of service types, a fairly broad classification of services, based on the market for service, was considered appropriate.

As mentioned earlier, paratransit services are often designed to serve the needs of a specific market. Such "specialized market" services form the majority of paratransit services implemented to-date. Two service markets dominate the paratransit spectrum: service for the transportation handicapped (TH), and service for the work trip (i.e., ridesharing). These two paratransit markets tend to revolve around a set of very different critical issues, although within each grouping the issues tend to be similar regardless

of the type of service provided. These two markets have been highlighted in this study.

The remaining paratransit services typically serve a broader segment of both trip types and user characteristics, although service may still be much more localized than a conventional transit system. The issues surrounding these types of service often differ from those surrounding the specialized services, even though some similarities do exist. For the purposes of this report, we have adopted the term "general community" paratransit to denote the grouping of paratransit options which serve a rather broad market.

In this study, paratransit in rural areas is also treated separately because of significant differences in operational and institutional issues in urban and rural settings. For the purposes of the Overview, rural services are not highlighted separately, since they represent more of a difference in setting than in the nature of the market served.

In addition to summarizing the findings of the full study, The Overview serves as a cross-sectional document, discussing each service grouping separately, while also drawing from the analysis of each grouping to present broader conclusions.

### ***The Size of the Paratransit Market***

The size of the paratransit market obviously depends on what is considered paratransit. If the broadest definition of paratransit is used - i.e., to include such services as taxi and school bus - it is clear from Table 1 that paratransit services are, in fact, significantly more heavily utilized than conventional public transit. Even if a more restrictive definition is used, paratransit still has a significant market. In fact, the market is even greater than that suggested in Table 1, since:

1. The transit figure includes some community-based services which might more appropriately be labeled paratransit.
2. The carpool figure represents commuter trips only, and does not include carpools used for other purposes.
3. The taxi figure includes some shared-ride paratransit service, and furthermore, does not include ridership on jitney operations.



4. Activity center-sponsored services other than school bus (e.g., shopping centers, neighborhood centers, etc.) which might be more readily considered paratransit are excluded, since it is impossible to determine the extent of this market.

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Table 1

NUMBER OF ANNUAL PASSENGER TRIPS ON "PUBLIC" TRANSPORTATION SERVICES

PUBLIC TRANSIT	8 BILLION (3)
CARPOOLS	7.5 BILLION (4)
VANPOOLS	60 MILLION (5)
TH SERVICES	20-30 MILLION (6)
TAXICABS	3.4 BILLION (7)
SCHOOL BUSES	9 BILLION (8)

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Nevertheless, it is clear that paratransit services represent a significant component of travel in the United States. It is equally clear that the market for paratransit services has been growing. While it is difficult to accurately forecast the future market for paratransit, some ballpark estimates can be made:

1. Over the past several years, carpooling has increased 1-3% annually in areas with active ridesharing programs. A 20% increase over the next decade is certainly feasible; since only 20% of all commuters carpool, this implies a 4% mode shift, which would mean an increase of approximately 1.5 billion carpooling trips per year.
2. Vanpooling use increased 250% between 1978-1980, to a point where there are an estimated 10,000 vanpools on the road. While some projections call for as many as 250,000 vanpools by 1985(9), a more likely target is 20-25,000, with even greater growth possible if more employers are convinced to institute programs. With over 4 million persons commuting 25 or more miles to work(10), and this number growing, 250-300,000 vanpoolers (or 120-150 million trips/year) is certainly a reasonable expectation.
3. It has been estimated that there are as many as 3-4,000 separate paratransit services for the TH in the U.S.(11) The future availability and use of service by the transportation handicapped will depend largely on individual locations' responses to the "Section 504" requirements for accessibility of public

transportation to the handicapped; if many transit providers follow the "parallel specialized service" route - as opposed to making transit fleets accessible - one can expect a significant increase in the supply of paratransit service. With the more successful paratransit systems currently carrying on the order of 15 trips per eligible user per year, a total of up to 50 million annual trips is possible, with that figure growing as the TH population grows.

4. The market for general community-based paratransit services depends in part on what services are defined as paratransit (i.e., is a community-sponsored fixed route service using minibuses paratransit?) and to what extent transit funding cutbacks stimulate or inhibit the growth of community systems. The Michigan Small Bus program, which promotes community paratransit service, serves over 2.5 million persons annually (statewide). If every state adopted a similar program, the national market could be over 100 million trips per year. This figure, however, does not include service which might be initiated by activity centers, neighborhood groups, and other organizations; thus, the total could be much higher.



Humphrey Go-Bart, a shuttle service connecting the university of California-Berkeley campus and the Berkeley BART station. (photo: U.S. DOT)

The numbers presented above are not intended as projections, but merely as indicators of the general magnitude of the paratransit market. The future market will depend on a number of key factors, as discussed later in this document. The next chapter of the Overview reviews the evolution of paratransit over the past two decades.



## ***2 The Evolution of Paratransit***

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Paratransit has evolved along a few basic lines (with some overlap) which correspond fairly closely to the broad market areas identified earlier. These are discussed below.

### ***General Community Paratransit***

The earliest public attention to what is now known as paratransit focussed on services meeting general travel needs; these services fall into the category of services we have termed "general community paratransit."

The growth in general community paratransit services can be traced to a number of basic premises: 1) the lower density development patterns predominating since World War II required a form of public transportation more flexible than fixed route transit, one approaching the flexibility of the auto; 2) such systems could be integrated with fixed route service to form regional transit networks in larger metropolitan areas; and 3) such systems represented a suitable way to serve the mobility needs of groups such as the elderly and handicapped.

The first premise was the foundation for much of the research that initiated the formal development and consideration of general community paratransit. This research, which began at the Massachusetts Institute of Technology (MIT), General Motors, and elsewhere in the mid-60's focused on (as yet unnamed) paratransit as a public service; meanwhile, examples of privately-provided paratransit service in the form of shared-ride taxis and jitneys could be traced back to the early 1900's.

The MIT research focused on a concept called "dial-a-bus" or "dial-a-ride," and envisioned large-scale, computer-controlled systems in which vehicles responded to demand for door-to-door service. However, the early demonstrations of this concept tended to be much less ambitious than originally conceived, in terms of both the number of vehicles operated and the flexibility of service provided. By the early 1970's, it was recognized that there was a range of flexibly-routed services, which included point to point systems, systems which served only a single destination (such as the "subscription" bus service initiated in Flint, Michigan in 1968), and systems that utilized a fixed route but allowed "deviations" on request (such as the

route deviation system initiated in Mansfield, Ohio in 1969). These services became collectively known as demand-responsive transportation (DRT). By the mid-1970's, these systems were commonly being referred to as paratransit.

The first major federally-sponsored demonstration of DRT took place in Haddonfield, New Jersey, beginning in 1972. The Haddonfield project lasted for about four years and successfully demonstrated both operational feasibility and the feasibility of computerized dispatching. However, because the community chose not to continue the service beyond the demonstration period, and because of relatively high per-passenger costs, the demonstration was not generally perceived as a success.

At roughly the same time that the Haddonfield project ended, the largest scale paratransit system ever attempted - in Santa Clara County, California was discontinued after six months of operation as a result of various operational and institutional problems. The Santa Clara system was truly an integrated regional system, with both demand-responsive and fixed route elements, and involved computerized dispatch and over two-hundred vehicles.



The Haddonfield Dial-A-Ride (photo: U.S. DOT)

The results of the Santa Clara and Haddonfield demonstrations received wide scale publicity, casting a rather negative light on demand-responsive services in general.

Nevertheless, there were numerous examples of successful general community paratransit services, and such services continued to be implemented in various parts of the country. Special funding programs in such states as California and Michigan generated dozens of new projects. However, there was a clear shift in the nature of these systems. First, the focus of most of these (and most subsequent) systems was on the community, rather than regional level. While the concept of regional systems, with paratransit components serving as feeders to line haul, has remained popular in the literature, few such systems have actually been implemented, since early efforts such as those in Ann Arbor (Michigan), Rochester (N.Y.), and Santa Clara County. The majority of the newer paratransit systems have been relatively small scale in nature, providing primarily intra-community travel.

The second major change has been a shift to much greater use of private contractors, typically taxi companies, to operate service. This change is significant for a number of reasons. First of all, it represents a shift to (generally) lower cost operators. Second, it represents a significant evolution of thinking on the part of both the taxi industry and the public sector, both of which initially objected to any joint involvement. (The role of the private sector in paratransit is discussed at greater length later.)

Another shift which has occurred in many areas is from a focus on serving the general community to one of serving the TH. Many communities which have viewed demand-responsive service as an expensive option for serving the general public now view it as an appropriate approach for meeting the needs of the TH. Some systems, such as the demand-responsive component of the Ann Arbor transit system, have therefore shifted to serve this market only. (The evolution of TH services is discussed further below.)

The most recent development related to general community paratransit is the recognition that it is not the type of service that defines paratransit, but rather the way in which service is initiated and operated. For example, some small communities, such as Westport, Connecticut, have chosen to implement combined demand-responsive/fixed route services, and many consider the entire system a form of paratransit. In addition, in a number of



metropolitan areas, including Boston, Detroit, and Chicago, suburban communities have implemented their own local services within the aegis of the regional transit authority. Such community-oriented systems differ from conventional mass transit in that they are locally-initiated and developed (although they may be funded in part by a regional transit authority). In addition, they generally utilize smaller vehicles, and the nature of the routes may be rather "flexible" (i.e., they may change by time of day, by season, or by changing demand patterns). Thus, these community systems exhibit certain characteristics generally attributed to paratransit modes, making a clearcut paratransit/transit distinction increasingly difficult (and, indeed, less important). Note, for example, that jitney services are essentially fixed route (although not fixed schedule), but are typically considered paratransit.

The majority of current general community paratransit systems are relatively small scale (under 10 vehicles), charge low fares, and are viewed as providing a basic mobility service. However, the evolution of this form of paratransit is clearly not complete, and there continues to be experimentation with automation, new service concepts (e.g., checkpoint service), new fare structures, and improved service integration structures.

Looking back over the past decade, it is clear that the introduction of formal, general community paratransit services was marked with some unrealistic expectations. Early studies envisioned large scale computer-controlled systems operating at or near break-even levels. When early systems were unable to reach such goals, the general conclusion was that "dial-a-ride" was a failure. The failure, however, was perhaps more in initial expectations than in actual operation. Because general community services have generally been introduced in areas not dense enough to support mass transit, they cannot be expected to support large vehicle fleets (even with small vehicles); furthermore, because of the flexible nature of the services, they can seldom achieve the levels of productivity needed to break even, particularly at the relatively low fare levels set by most systems. Consequently, the realization that publicly-operated demand-responsive services would invariably fall short of these original goals has led planners to lean increasingly toward approaches which might better keep operating costs down. This has involved the increasing implementation of less flexible options such as hybrid services (checkpoint, deviation, or flexible fixed route), as well as increasing use of

the private sector to operate services. Furthermore, in many areas, paratransit has been increasingly viewed as a mechanism for serving a rather specific, and often modest, transportation market. Hence, in recent years, with expectations revised and costs controlled, paratransit has proven to be an effective mechanism for serving specific community-based travel needs in various types of settings.

### ***Paratransit Services for the Transportation Handicapped***

The previous section points out that some general community paratransit systems have evolved into systems serving only the TH. However, this only partially explains the evolution of paratransit services targeted to this service market.

One of the major market segments served by paratransit services is the group of elderly and handicapped (E&H) individuals who comprise the TH - those persons whose physical (or mental) conditions make it difficult for them to use conventional transit. It has been estimated that over 13 million Americans experience "more than average difficulty" in using public transportation, due to inability to access and board a transit vehicle. While nearly a third of these people do drive cars, the remainder are in need of some form of specialized transportation to get around. In response to this need, a great many specialized transportation services have been introduced over the past several decades.

Many TH paratransit services were originally initiated by (both public and private) social service agencies, which realized that transportation was a necessary auxiliary service if their clients were to benefit from their other programs. Such agencies also saw paratransit as a means of enabling their clients to attend to their own basic needs without having to depend on relatives and friends to chauffeur them.

These specialized services have been funded largely through a variety of government-aided programs, including those authorized by such legislation as the Older Americans Act of 1973, the Social Security Act of 1935, the Public Health Service Act of 1944, and the Community Services Act of 1974. In all, there are over 100 different federal programs providing funds for TH services; as of early 1980, 65 of these were administered by the U.S. Department of Health and Human Services (HHS). Although an accurate count is nearly impossible to obtain, due to constant changes and the fact that many local

programs are too small to receive any attention, it has been estimated that there are over 3000 such services in this country at present (11). By the late 1970's, the sheer number of such services was viewed as a problem, in that there was significant duplication of services in some areas. As a result, in many areas efforts began to coordinate existing programs. Coordination remains one of the dominant issues in TH service planning today, and a variety of forms of coordination have been demonstrated or proposed.

Although social service agency programs continue to dominate the field, regular public transportation providers (i.e., transit operators) and other governmental agencies have become increasingly involved in the initiation of specialized TH services. Transit's involvement in this area really began in 1970, when amendments to the Urban Mass Transportation Act of 1964 declared it to be: "national policy that the elderly and handicapped have the same right . . . to utilize mass transportation facilities and service . . . ." Along with reduced fare programs on fixed-route service, paratransit became a common response to the needs of the E&H. Activities in this area intensified when the National Mass Transportation Assistance Act of 1974 (which created federal operating subsidies for the first time) required "special efforts" to be made to meet the needs of the E&H.

In contrast to the HHS-funded programs, the UMTA initiatives were targeted at all individuals with transportation problems, rather than toward travel needs induced by social service agency programs. By the mid-1970's a number of transit agencies, including those in Portland (OR), Cleveland (OH), Denver (CO), and Minneapolis/St. Paul (MN) were leading the way in terms of introducing paratransit services for the TH. (In addition to sponsoring such transit agency services, UMTA has provided funds to non-profit organizations through the 16(b)(2) program to purchase vehicles for TH service.) However, as has been the case with general community service, there has been a gradual shift over the past few years to greater use of private for-profit operators to provide transit agency-sponsored service. In addition, some transit agency services, such as the ACCESS brokerage project in Allegheny County, Pennsylvania, involve coordination with social service agency-sponsored services.

State and local governments have also entered the TH paratransit field. In some cases, states have provided specialized funding; for example, in Wisconsin, the Elderly and Handicapped Transportation Assistance Program, used



to fund paratransit services throughout the State, was budgeted at nearly \$2.5 million for 1981. In other cases, state (and local) agencies have been responsible for coordinating social service programs and/or directly providing transportation service. Furthermore, as suggested above, some communities have converted general community services to specialized TH services.

The issue of paratransit's role in ensuring mobility for the TH became quite controversial when the U.S. DOT issued requirements that transit facilities be made accessible to the handicapped, so as to conform with Section 504 of the Rehabilitation Act of 1973. Opponents of "504" argued that paratransit is a much more effective method for increasing the mobility of the TH than is accessible fixed route bus or rail. As of this writing, the opponents of 504 appear to have the upper hand, in that USDOT has approved new regulations that allow "local option" in meeting the needs of the TH. However, these new regulations have themselves already been challenged, and it is unclear what the final disposition of this issue will be.

In summary, while there has been some controversy over whether paratransit or accessible fixed route is more cost-effective for serving the TH, it is clear that paratransit has become an accepted, if not the accepted method for improving the mobility of the TH. Specialized paratransit services have been implemented by government at various levels, transit operators, public and private social service agencies, and also by private entrepreneurs. The key challenge of the 1980's is not whether to implement these services, but how to design and coordinate the services so to allocate resources in the most cost-effective manner.

### ***Commuter Ridesharing***

The third major category of paratransit services - commuter ridesharing - has evolved around providing service for the work trip. Although carpooling has existed for decades, formal ridesharing activity developed primarily out of energy-related concerns raised by the 1973 oil embargo. Early ridesharing promotional efforts were devoted to areawide carpool matching.\* While the very first programs involved marketing only to the public at large, it soon

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\* These were generally publicly-sponsored, although several, including those initiated by the Westinghouse Broadcasting Company, were privately-sponsored.

became clear that to have any significant chance of matching commuters, it was necessary to work through employers. Despite some successes, many of the early projects, including the 100 carpool demonstrations funded by the Federal Highway Administration (FHWA), had only limited impacts. For example, the evaluation of the FHWA program revealed an average shift of .8% of commuters into new carpools (or an increase in carpool usage of about 4%). (12)

At about the same time as the 1973 oil embargo, the 3M company of St. Paul, Minnesota, implemented a variation on the carpool concept - vanpooling - in response to a serious parking problem. The response to the vanpool program has been significant: the initial 6 van fleet has grown to 145, while, at the same time, carpooling has increased as well. It is estimated that approximately 40% of 3M's employees now rideshare, as compared to 14% who carpooled prior to the initiation of the formal ridesharing program.

Despite 3M's success the concept of the employer-sponsored vanpool program spread fairly slowly. Little by little, other companies began initiating ridesharing programs; most of these promoted both carpools and vanpools, and some also sponsored buspools. While not all of the programs have been as successful as 3M's, a number have achieved even higher levels of employee participation. For example, at Connecticut General Life Insurance Company in Bloomfield, Connecticut, some 44% of employees rideshare to get to work, while at the Tennessee Valley Authority in Knoxville, 85% of employees are involved in some form of ridesharing. It is estimated that, in all, some 500 companies around the country currently sponsor vanpooling programs, with 9-10,000 vans on the road. In addition, many more companies sponsor carpool programs.

Thus, aided by an energy shortfall as well as parking problems and a variety of other factors, the concept of ridesharing expanded from just carpooling to include vanpooling and buspooling.\* Furthermore, it was shown that employers can have a significant impact on employee transportation choice. Both of these factors were key elements in the next stage in the evolution of ridesharing: the development of the "third party" ridesharing agency.

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\* Today, U.S. DOT defines "ridesharing" as any mode in which rides are shared, including transit. Thus, this broader definition of ridesharing includes more than paratransit.



3M Vanpool

(Photo: FEA)

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Third party ridesharing agencies have the specific purpose of facilitating ridesharing arrangements. Recent third party programs differ from earlier government-sponsored programs in that they encourage all forms of ridesharing (including transit) and, in addition to providing general matching services and promotion, may also lease vans (or buses) to employers or interested commuters. Third party programs have sometimes been implemented directly by existing (i.e., governmental or non-profit) organizations, but more often have involved the formation of new organizations, often with relatively large staffs.

The earliest initiator of this model of third party ridesharing programs was Commuter Transportation Services, Inc., of Los Angeles, commonly called Commuter Computer. A non-profit corporation, Commuter Computer was sponsored by both public and private organizations. Commuter Computer began a carpool matching project in 1974, with a focus on employers; in 1976, a vanpool element was added. The latter initially involved 20 vans, which were made



available to poolers on a straight fare basis (i.e., they were maintained by the corporation, not leased to the poolers). Based on the success of this pilot effort, the program was expanded and marketed vigorously to commuters throughout the area. Commuter Computer is currently one of the largest ridesharing efforts of its kind in the country, with over 80 employees and a total annual budget of around \$2 million. Commuter Computer works with an estimated 1000 companies, maintains a data base of 470,000 commuters, and estimates that it has been responsible (either directly or indirectly) for the placement of nearly 60,000 persons into carpools and the formation of 95 vanpools, as of mid-1980.\*

Ridesharing agencies now exist in many cities across the U.S., though few are as active (or large) as Commuter Computer. Ridesharing agencies have begun to play an important role in stimulating employers to either establish ridesharing programs on their own (or aid the third party agency in directing employees to ridesharing). Third party programs which are open to the public, such as RIDES, in San Fransisco, also provide a mechanism for employees in companies with no ridesharing programs to form pools.

Thus, despite some early disappointments, ridesharing has been demonstrated to be a viable mode, with benefits to employers (in terms of reduced parking requirements and other benefits), employees (reduced commuting costs) and society (reduced energy consumption and related impacts). The concept has been introduced through both the public and private sectors on their own and in partnership. The past few years, with increased gasoline costs, greater information on existing programs, increased public awareness of ridesharing modes, and greater public sector funding and promotion, have witnessed a significant growth in ridesharing activity and promotion. The continuation of conditions suggest further growth over the coming years.

### ***Contrasts With the European Experience***

Finally, in assessing the development of paratransit in North America, it is instructive to compare the trends here with those in Europe. Indeed, the history of paratransit in Europe has been quite different from that in the United States and Canada.

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\* Commuter Computer no longer leases vans directly.

The difference originates with the prevailing attitudes toward public transportation: unlike the often lukewarm acceptance in the U.S., transit is both strongly accepted and patronized in Europe. Because of the sheer strength of the official transit establishment and the fact that the existing institutions are so thoroughly entrenched and supported in fact and law, European paratransit services have tended to develop in a rather piecemeal fashion, with, as yet, no central unifying factor, vocabulary, or institutional focus. Unlike the relatively extensive development of government-sponsored (i.e., "top down") paratransit services in North America, the experience in Europe has been that such services have seldom developed except from locally felt mobility needs. National government interest in paratransit has dwindled (where, indeed, it ever existed) throughout Europe; the most promising developments have occurred through community and private sector initiatives.

Of special interest to Americans, however, is that such initiatives have produced a number of technologically and institutionally innovative approaches which have yet to be attempted in the U.S. on any significant scale (e.g., automated checkpoint demand-responsive services, publicar and other shared-vehicle system, and rural innovations, such as the "postal bus"). European projects such as Retax and Rufbus (Germany), Velo-Self (France), and Witkar (Netherlands) provide working models which offer insight into possible future directions for U.S. transportation.

The above-mentioned technological advances notwithstanding, the greatest divergence between paratransit development in the U.S. and Europe has been in the area of ridesharing. In contrast to the steady expansion of formal work trip programs in the U.S., the concept of organized vanpooling and carpooling has never really caught on in Europe. The few efforts undertaken have been very local and informal, and often rather short-lived. The major exception has been that several automobile manufacturers have established successful ridesharing programs, both to facilitate employee transportation and to encourage auto sales. The European governments and other employers have apparently seen little need to push ridesharing; transit is fully accepted and heavily utilized, and very high fuel prices (by U.S. standards) have long been the rule. Thus, there has been no "energy crisis" impetus similar to that in the U.S., where transit is not seen by many commuters as a viable alternative (and, indeed, in many areas, is not).

Another difference between paratransit in Europe and North America is the reduced emphasis given to specialized services for the TH in Europe (with the possible exception of Sweden). Once again, this is in part a reflection of the differences in attitudes towards transit in the two continents. While Europeans view transit as a public service, many Americans, particularly those in smaller communities, view transit as needed only by the TH and other "disadvantaged" persons who cannot drive. In addition, the multitude of specialized services for the TH in the U.S. has been brought about by the existence of a variety of federal funding programs and grant requirements which do not have European counterparts. However, in those cases in Europe where TH services are offered, taxi companies are the predominant providers. This approach tends to keep costs relatively low.

Thus, the development of paratransit has followed a rather different course in Europe than in North America. Neither continent is clearly the "leader" in this area. Certain European models (e.g., checkpoint service) might be transferable to the U.S.; certain American concepts (e.g., vanpool brokerage) may be appropriate in certain European settings. There is clearly a continuing need for information transfer between the continents.



### ***3 Paratransit: Actors and Roles***

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In the first chapter of this Overview, it was pointed out that there are a multitude of attitudes regarding paratransit. One of the prime reasons for this, aside from the existence of multiple service concepts, is the wide number of actors involved, in some way, in paratransit planning and operation. In this chapter, the roles of various paratransit actors are discussed, and some conflicting perspectives on paratransit are explored.

#### ***Major Actors Involved in Paratransit Provision***

First of all, consider that, at the local level, there are numerous groups involved in paratransit service provision (in addition to local government and planning agencies). Major actors include: transit authorities; private transportation companies, particularly taxicab operators; activity centers, such as employers and social service agencies; and individual entrepreneurs (including taxi owner/operators, vanpool owner/operators, etc.). In many locations, there is also another type of actor in the form of a ridesharing agency or some other "brokerage" organization. Other actors who do not fit neatly into these categories may be active as well. This multitude of actors virtually ensures that there be some degree of "conflict" at the local level. The nature of conflicting perspectives is explored within the context of the roles of each of the major categories of actors introduced above.

#### **The Transit Authority**

The transit authority has played a central role - sometimes supportive, sometimes adversarial - in the development and operation of paratransit systems over the past decade. The role of the transit authority continues to evolve and may change considerably over the coming decade.

As noted earlier, paratransit was initially viewed as a publicly-provided service. Indeed, many early general community paratransit systems, including those in Ann Arbor and Rochester - were operated by transit agencies. Nevertheless, even then the attitude of transit management in general towards paratransit was anything but receptive. Most transit managers were concerned with operating conventional fixed route services and cared little about experimenting with innovative concepts. This helps explain why the majority

of general community paratransit systems to-date have been implemented in smaller cities not having transit authorities.

A number of factors made the transit industry as a whole (with a number of exceptions) increasingly hostile to paratransit during the mid-1970's. The first was the shift to increasing private operation of general community paratransit systems; the second was growing public involvement in ridesharing. In both cases, paratransit began to be viewed as a competitive threat. The American Public Transit Association (APTA) - the transit industry organization - editorialized against paratransit, and its views were echoed by transit labor - one of the rare occasions in which labor and management have been in agreement. Indeed, in a number of instances, transit opposition to paratransit was fueled by labor concerns (actual or anticipated); the 13(c) labor protection clause was used in some localities to either block paratransit implementation or require transit labor participation (i.e., in operation of the service, or, at a minimum, responsibility for maintenance). Ironically, this opposition tended to further convince paratransit supporters that public transit authorities - with their higher costs, less flexible work rules, and resistance to innovation - were inappropriate providers of paratransit.

Nevertheless, a number of transit authorities around the country did sponsor paratransit services. Some authorities, such as MTC in Minneapolis/St. Paul and Tidewater Transportation District Commission in Norfolk (VA), supported by UMTA demonstration grants, began to offer ridesharing services. Others, such as Tri-Met in Portland (OR) and GCRTA in Cleveland, introduced specialized services for the elderly and handicapped. Finally, still others, including the Orange County (CA) Transit District, continued to sponsor general community paratransit services, sometimes contracting with private operators to provide the service. In general, newer transit agencies, with less ingrained practices, have tended to be more flexible and have readily incorporated paratransit services.

Two other factors tended to shift the attitude of transit agencies towards paratransit. The first was the controversy over the "Section 504" accessibility guidelines. Transit industry opposition to making buses and railcars wheelchair accessible led the industry, and particularly APTA, to actively advocate paratransit. Secondly, some transit agencies have begun to

view paratransit, in the form of ridesharing, TH, and general community services (i.e., in suburban communities), as a means of expanding their constituencies. This has become increasingly important in this era of tightening fiscal resources, when local bodies funding regional public services have increasingly sought assurances that they are receiving services commensurate with their contributions. Paratransit services are increasingly being introduced in areas that cannot be served cost-effectively by conventional transit service. One example of the type of expansion is in the Detroit area, where the Southeastern Michigan Transportation Authority (SEMTA) provides paratransit service in thirteen districts (each comprising several municipalities) within its jurisdiction. The overall paratransit system, called the SEMTA Connector, serves the E&H in the urbanized portions of the region, and provides service to the general public in the less densely populated portions of the region.

Currently, there is no single prevailing "attitude" towards paratransit on the part of the transit industry. Some transit operators continue to, at best, ignore paratransit and, at worst, oppose it. On the other hand, some transit agencies have actively embraced the concept. Some of the transit agencies in the latter category have supported paratransit, but have avoided the problem of high costs generally associated with transit operation. They have done so by playing more of a brokerage role, funding and coordinating paratransit services but using lower cost private operators to actually provide the service. One example of a transit agency operating in this manner is the Northeastern Illinois Regional Transportation Authority (RTA), which operates in the Chicago area, sponsoring intra-community services in municipalities outside of the City of Chicago.

What role should the transit authority play with regard to paratransit in the future? On the one hand, the transit agency, as the central provider of urban transportation services in most areas, is a logical participant in paratransit development and implementation, particularly if its role is one of coordinator rather than actual service provider. On the other hand, even if they become involved in paratransit, transit agencies may tend to "favor" conventional services at the expense of paratransit options. Ultimately, however, in light of the worsening transit fiscal situation, transit agencies will likely be forced to swallow their biases in favor of providing service in



the most cost-effective manner possible; that suggests a growing role for paratransit options within the public transportation sector.

### The Private Sector

Unlike the case of conventional public transportation, which has shifted almost exclusively to the public sector, the private sector has played a major role in the initiation and operation of paratransit services. As suggested earlier, the role of the private sector has increased significantly over the past decade and should continue to increase as paratransit "matures." Private involvement in paratransit has come from a multitude of actors, including private transportation operators (taxi and private bus companies), activity centers (employers, non-profit social service agencies, developers, etc.), and individual entrepreneurs (jitney and vanpool owner-operators). The roles of these actors are discussed below.

#### Supply Side Involvement

The traditional role of the private sector in the transportation environment is as a supplier of service. Within the context of paratransit service, the leading private sector service provider has been the taxi industry. Unlike the transit industry, the taxi industry is characterized by a high degree of competition, a considerable amount of labor flexibility, and for the most part, the absence of government subsidy.

In fact, the taxi industry's involvement in paratransit has come about both through its own initiative and through the initiative of the public sector. Whereas most taxi participation in paratransit (as defined here - i.e., not including exclusive-ride taxi) to date has come through the latter - in the form of purchase of service contracts - the former is becoming more prevalent, as some companies have begun to take a more aggressive stance in seeking out paratransit opportunities. For example, a number of companies have purchased lift-equipped vehicles and have used these vehicles as a marketing tool to secure service contracts.\* In some locations, companies have expressed a willingness to offer unsubsidized shared-ride service if such service is legally permitted. Finally, we have begun to witness, in some

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\* There is also an industry of private "chair car" carriers which cater solely to the handicapped market.

cases, a shift from a taxicab company to a "paratransit" company, which may offer shared-ride, TH, package delivery, limousine, and perhaps even fixed route service to complement the traditional exclusive-ride taxi business. Companies such as these are experiencing an increase in business in an era in which many taxi companies are failing. These companies are also benefiting from government funding (e.g., through social service programs), without requiring direct subsidization or facing the prospect of public takeover. Such diversification may ultimately prove to be the key to both the future viability of the taxicab industry and the future of public transportation.

Of course, the taxi industry has not always embraced paratransit. When publicly-provided paratransit services were first introduced in the late 1960's, the taxi industry generally ignored them. Subsequently, however, recognizing that publicly-sponsored paratransit would compete with their services, taxi companies became more interested in paratransit. The taxi industry insisted that publicly-sponsored paratransit service would hurt its business and brought suits challenging paratransit implementation in a number of cities, with challenges based either on local regulations or the Section 3(e) competition clause contained in the Urban Mass Transportation Act of 1964. Such suits were successful in only a few cases (e.g., Santa Clara County and City of Orange, California). Nevertheless, they helped bring about a recognition on the part of the public sector that the taxi industry might be a low cost, and often appropriate, provider of paratransit. This recognition eventually led to the current role of taxi operators in providing contract paratransit service.

Recently, the major source of conflict between the taxi industry and the public transportation sector has been UMTA's 16(b)(2) program. The taxi industry has expressed strong opposition to that program, claiming that the public provision of vehicles (even without operating subsidies) to non-profit agencies represents unfair competition. Some taxi operators have sought to block all 16(b)(2) grants in their areas, and in at least one case (Pennsylvania), a local complaint resulted in grants being held up throughout the state. This opposition may be muted somewhat in coming years, however, by a policy change (in mid-1982) which allows 16(b)(2) vehicle recipients to lease the vehicles to private for-profit operators; this had previously been prohibited.

While it has assumed a dominant role, the taxicab industry is not the only private provider of paratransit services. Private bus operators, which still exist throughout the country, have also become involved in paratransit service provision. Typically, such companies provide service in suburban communities, under contract to either the community or a regional transportation industry. Such services exist in the Boston and Chicago areas, for example, where private bus operators provide both fixed route and demand-responsive services. In recent years, there has been increased interest in utilizing private operators, particularly as funding for public transportation has been reduced. It is conceivable that the next decade will witness a significant shift from public back to private transit operation, reversing the trend of the past 20 years.

There are also other, less traditional, private providers of paratransit services. The auto rental industry, for example, has entered the field, albeit in a tentative way. The Hertz Corporation, for example, initiated a vanpool program targeted initially to federal employees (who are unable to use government vehicles for commuting). Hertz has made attempts to expand the program to non-federal employees, and to include "sedan-pools" as well as carpools. At the time of this writing, the success and future of Hertz' efforts were unclear. However, regardless of the eventual outcome of its pilot program, Hertz has already expanded the range of actors involved in paratransit provision.

One can envision an expanded role for the auto rental industry in paratransit provision. For example, auto rental companies could expand their ridesharing activities, attracting users by making automobiles available at low rates on weekends for use of ridesharers. (Currently, rental companies have many spare vehicles on weekends). Alternatively, the auto rental industry may be the most appropriate provider for short term auto rental or shared vehicle schemes such as the Witkar system in Amsterdam. Such options are discussed further in Chapter 4 of this Overview.

Automobile manufacturers themselves have also become involved in the provision of paratransit, largely as a mechanism for leasing vehicles. For instance, a Chrysler Corporation subsidiary - Vanpool Services, Inc. (VPSI) - provides vanpool vehicles and, in some cases, manages third-party vanpool programs for both the public and private sectors. VPSI has also experimented



with a system (in Glendale, California) in which vans used for commuting by employees of a shopping center were used to provide mid-day, demand-responsive service to shoppers and area residents. VPSI has now become the largest provider of third party vanpool vehicles in the country.

Private sector involvement in paratransit has also included the individual entrepreneur. Although this group has seen limited involvement in paratransit to date, it could become a more important force over the coming years. Jitney services exist, legally and illegally, in a number of cities. (Of course, in contrast to the U.S. experience, jitneys are a common mode of transport - and an important source of employment for unskilled workers - in many Third World countries.) Independent taxi owner-operators exist in many areas of this country, but in only a few locations (e.g., Washington D.C.) do they have an opportunity to provide shared-ride service. The newest entrepreneur on the urban transport scene is the vanpool "owner operator" (i.e., an individual who operates his own vanpool, either to cover commuting costs or to make a profit). Independent vanpool owner-operators exist in many areas, although their numbers are relatively small.

The amount of entrepreneurial activity that can take place has generally been limited by local regulations designed to protect both the transit and taxi industries. As suggested above, most cities allow neither shared-ride taxi nor jitney service. Profit-making or "for hire" vanpools fall under common carrier regulations and are often regulated by local transit authorities: for example, a vanpool-type service in Los Angeles was forced off the road by such regulations. However, if regulatory barriers are relaxed - as could happen if funding constraints limit the availability of mass transit service - then we could see an expanded role for individual entrepreneurs in the provision of paratransit service. As localities become increasingly affected by cutbacks in federal transit subsidies, they will rely more and more on these and all other types of private service. In short, the private sector, in a variety of forms, should become an increasingly important force in the provision of paratransit service.

#### Demand Side Involvement

In addition to providing service, the private sector has also become involved, to some extent, in generating and controlling the demand for



transportation. This role has been played by a variety of activity-centers - organizations that, in effect, create the need for travel.

The most obvious example of this is the major employer who sponsors a ridesharing program. Thousands of companies have involved themselves in some way in their employees' travel patterns. This involvement has ranged from assisting in carpool matching to large scale programs covering multiple modes. For example, the Aetna Casualty and Life Insurance Company in Hartford offers carpool and vanpool matching, carpool and vanpool parking incentives, inter-facility shuttle service, vans and buses for commuter pools, and public transit passes. This program has resulted in the use of ridesharing services by over half the company's 11,000 employees, and has saved the company an estimated \$600,000 annually in reduced parking subsidies in downtown Hartford alone. As suggested earlier, at least 500 companies around the country sponsor vanpool programs, and many others subsidize the cost of transit service.

Clearly, many companies have recognized the potential benefits of ridesharing services to their employees as well as the potential benefits to the companies themselves - as an employee recruitment tool and in reduced parking costs and reduced employee tardiness and absenteeism. Hence, the role of the employer in transportation has been growing. This growth has been abetted by technical support from public (or joint public-private) ridesharing agencies and Transportation Management Associations (TMA's), as well as assistance and cooperation from transit agencies. Such arrangements, especially the latter, should take on increasing importance as funding for conventional public transportation becomes tighter and alternative commuting modes receive greater attention.

Of course, the employer is not the only example of private activity center involvement in paratransit. Thousands of private non-profit social service agencies/centers around the country have introduced transportation services aimed at getting their clients to and from their programs. Many of these organizations also offer broader transportation services, allowing both clients and non-clients to travel for other purposes as well.

In addition to employers and social service agencies, paratransit services have been introduced by merchants, developers, and various other types of activity centers and groups. In many cities, for instance, supermarkets

provide transportation services. In most cases, this involves special weekly (free) bus routes for elderly and handicapped residents of the community. There have also been cases of supermarkets sponsoring shared-ride taxi services to help get shoppers home from the store with their packages.

On a somewhat larger scale, there has been some experience with shopping centers sponsoring service for the general public. The developer of the Echelon Mall in Voorhees Township, New Jersey has provided such a service for the past several years. The Galeria Mall in Glendale, California has experimented with the concept as part of a service provided by Vanpool Services, Inc. The Tyson's Transportation Association, a TMA in northern Virginia, operates a free shuttle service for shoppers within the Tyson's Corner area (and also administers a vanpool program for employees of businesses in that area). With over 19,000 shopping centers in existence today, and only 3% of the 65 billion trips per year to shopping centers made by transit, the market for service to shopping centers is clearly enormous. It is likely that more and more shopping center developers may recognize the value of paratransit as a mechanism for maintaining accessibility in an era of rising gasoline costs, and developers of new centers may be able to utilize paratransit services to help mitigate certain environmental concerns of surrounding communities.



Boston's Share-a-Cab

(photo: D. Fleishman)

Similarly, developers and owners of commercial and residential properties have also been involved in providing paratransit services. In communities with limited transit service, such as Cherry Hill, New Jersey, large apartment complexes sometimes provide transportation services for their residents. An association of hotel and restaurant owners in the Laclede's Landing section of St. Louis operated a shuttle service for patrons and visitors to the area. In Houston, developers of both suburban subdivisions and industrial parks have implemented ridesharing programs as a tool to attract residents and businesses to their developments. Again, the willingness of developers to participate in this manner should increase if energy costs once again begin to climb markedly.

Airports and schools are other organizations which may sponsor paratransit services. For example, at Boston's Logan International Airport, the Massachusetts Port Authority contracts for shuttle bus service connecting the airport terminals to a rapid transit service, and also sponsors a shared-ride taxi service, paying a substantial proportion of system control costs. In other sections of the Boston area, the University of Massachusetts and Harvard University sponsor shuttle services between different campuses and to and from other locations.

Finally, in some cases, the impetus for the provision of paratransit service has come, not from the management/developers/ownership of activity centers, but from groups of individuals. For example, citizens of the new town of Reston, Virginia, 30 miles outside of Washington, D.C., formed and managed the Reston Commuter Bus. At its peak, in 1977, this service carried 2600 commuters per day between Reston and Washington. More recently, in response to massive commuter rail fare hikes, commuters in a few suburban Chicago communities organized bus pools and chartered vehicles. This type of cooperative venture may also have potential in inner city neighborhoods, particularly in cases where public transit service is reduced because of budgetary constraints.

Of course, the above examples notwithstanding, the development of activity center services has been rather slow. This is due, in part, to the fact that, to an even greater extent than is true for private operators, activity centers generally have not been tied into the public transportation planning and funding process. As a result, activity centers have had to rely on their own planning and funding resources (although this has changed somewhat with the



introduction of transportation brokerage organizations, as described below). The lack of emphasis on the part of the public sector on the potential role of activity centers in transportation provision (as typified by the exclusion from the planning process) has served to constrain the growth of such services.

In summary, one of the primary factors that distinguishes paratransit from conventional transit is the varied and growing role of the private sector in service initiation and provision. This facet of paratransit is consistent with the current "mood" in the country towards a reduction of the role of government in providing services. Continuing federal budget-cutting, coupled with increasing costs - in vehicle purchase and operation, as well as purchase of land and construction - can only serve to increase the role of the private sector in the provision of transportation service.

### The Ridesharing Agency

The newest actors in the provision of paratransit services are organizations that attempt to "match" the demand for transportation with the supply. With a few exceptions, such "brokerage" activities have been limited to commuter trips, and have been performed by ridesharing agencies.

Ridesharing agencies have taken on a variety of forms. In their simplest form, such agencies merely disseminate information and provide limited matching capabilities (on a request basis). At the other extreme, some ridesharing agencies have large staffs and are aggressively involved in marketing ridesharing - to employers and the general public - and providing vans on a third party basis. Some ridesharing agencies see their mission as marketing ridesharing; others see their mission more as one of assisting companies and individuals in finding the most cost-effective commuting alternative. In some cases there is also controversy over ridesharing options, with some groups considering vanpooling the most "important" mode, and others focussing on carpooling as the mode with the greatest market potential. (There is even argument within the vanpooling community over whether "third-party" or "employer-based" vanpooling is the best way to proceed). Despite these conflicts, however, ridesharing agencies have played an important role in stimulating ridesharing activity, and perhaps more importantly, in involving the private sector (i.e., employers) in the support of paratransit modes.



In some locations, there has also been some antagonism between ridesharing agencies and transit authorities. In particular, some older, more established transit agencies have considered the new ridesharing agencies competitors, trying to lure riders from transit. On the other hand, in other areas, the transit authority itself serves as a ridesharing agency. In still other areas, cooperation between the two has served to demonstrate the potential benefits of coordinated transportation provision. As in the cases of other types of paratransit participants, changes in the public transportation environment - brought about by escalating costs and dwindling public funds - should expand the role of the ridesharing agency, and the brokerage concept in general. As this occurs, cooperation between these actors should increase as well.

### ***The Role of State and Local Government***

State and local governments have played crucial roles in the development and implementation of paratransit services. These roles are described below.

#### **State Government**

State agencies have played important roles in promulgating paratransit services, primarily through demonstration/funding programs targeted specifically at paratransit. In fact, state programs in Michigan, Minnesota and California have spawned the introduction of the majority of general community paratransit systems now operating in the U.S. Meanwhile, these and other states have introduced various other types of paratransit-oriented programs, including statewide ridesharing and TH programs. The different types of programs are discussed below.

The Michigan DART (Dial-a-Ride Transit) program, since renamed the Small Bus Program, was instrumental in establishing over 40 paratransit systems in small communities throughout the State. The Minnesota Paratransit Demonstration Program - funded with \$9 million for the period 1978-1981 - produced 65 paratransit systems (of a variety of types) throughout the State.

The success of state demonstration programs in achieving ongoing systems, particularly in comparison with federal demonstrations, can be traced to two key factors:

1. State demonstrations - particularly the Michigan and Minnesota programs, but other projects as well - have generally been tied to the availability of ongoing operational support. Thus, once a city sees the benefits of a paratransit system, it is able to continue it through a combination of local and state assistance.
2. State government, unlike the federal government, is likely to maintain an ongoing relationship with a community. This provides an opportunity to establish a local constituency, often absent in the case of federally-sponsored projects. Many states also offer ongoing technical assistance.

Of course, operating funds can be as important as demonstration funds (for all types of public transportation service) and certainly represent a necessary complement to demonstrations. The California experience demonstrates the importance of ongoing funding. California does not have a paratransit demonstration program per se, although Caltrans (the California Department of Transportation) clearly supports paratransit, and many California communities of a moderate density are well suited to paratransit. However, California does have a program of operating assistance to local communities (using sales tax revenue). As of 1980, over 45 general community paratransit systems had been introduced throughout the State.

Other states have also provided funding (for demonstrations, ongoing operations, and/or technical assistance) for paratransit, although on a much smaller scale than the above three. For instance, the Wisconsin Mass Transit Demonstration Program established a number of systems in small communities, and a current transit assistance program there has made funds available for regional planning studies aimed at developing cost-effective services for all types of markets (i.e., commuter travel, TH, and general public service).

Alaska and North Carolina also provide extensive funds for individual rural and small city systems, while Iowa coordinates all local services on a statewide basis - all state and federal funds are channeled into 16 regional systems, with one agency in each region charged with responsibility for coordinating resources for the region. Iowa has had considerable success in reducing overall costs, while improving the level of service and eliminating dupliative services.

In terms of service targeted to the TH, all states play some role, as much of the federal social service funding is channeled through state agencies.\* However, several states have also instituted their own funding programs for operating assistance and/or for coordination of federally-funded services. For instance, Delaware and West Virginia implemented state-wide systems, while Maine, South Carolina and Florida have programs aimed at coordinating local services. Wisconsin and Pennsylvania provide funds for local E&H services through special assistance programs.

The states have also had involvement in the promotion of ridesharing. Several states, including Massachusetts, California and Minnesota, organized state-wide programs to promote both carpooling and vanpooling. Such programs have focused on both employers and the general public. Success has varied from state to state - and within each state - but, in general, these programs have proven less successful than have programs sponsored directly by individual employers and by local third party organizations. Finally, in addition to operating their own programs, states have also been involved in ridesharing through the provision of funds - and sometimes technical assistance - to local ridesharing agencies.

The role of the state will become more crucial over the next few years, as federal transportation operating assistance of all kinds is reduced and, for most purposes, eliminated. Clearly, states will be expected to pick up a greater share of transit operating deficits. This could have a negative impact on paratransit, if new state funding demands make them less willing to experiment with innovative concepts. On the other hand, it could have a positive effect, if local governments turn to paratransit as a means of reducing cost, and the state can provide the kind of technical assistance unavailable from the federal government. States will clearly continue to have a very important role to play, and will hopefully be willing to assume an active stance in promoting service concepts that are most effective for their communities.

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\* Under present federal plans to consolidate much of the social service funding into block grants, the states will take on more significant roles in the disbursement of funds to local agencies.





A rural service for the transportation handicapped (photo: U.S. DOT)

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### Local Government

Local government agencies have played varying roles in the development and provision of paratransit services. Depending on the type of setting (e.g., large metropolitan area vs. small town) and the nature of the service in question (general community, TH, or commuter ridesharing), local government involvement has ranged from direct operation to enforcement of regulations prohibiting certain service options.

Local governments obviously play an important role in all local services through their local match contributions to state or federally-funded services. However, they have also played a key role in the operation of general community service in certain states - notably those with active state programs (i.e., Michigan, Minnesota, California and Wisconsin). Municipal government bodies have tended to operate, or contract out, local service in



smaller cities - generally those without transit authorities - or in suburban communities, within the aegis of regional transit authorities. The latter is seen currently in the Boston and Chicago areas; in these cases, the transit authorities have provided partial funding, and have helped in the initial planning of the individual systems. Because of the number of systems initiated through the above state programs, coupled with the transit authority-sponsored operations, local government agencies acutally comprise the single largest provider of general community paratransit services. Local governments have also played significant roles in providing TH services. Some of the "general community" services in the states mentioned above are targeted to the TH (and indeed other systems in those states are patronized predominantly by the TH). Moreover, in most locations, municipal and county social service agencies provide TH services for their clients; certain local and county agencies have also made efforts to cooridnate specialized services provided within their jurisdictions.

In looking at the future development of paratransit, the most significant aspect of local government involvement may be of a regulatory nature. As mentioned earlier many municipalities currently have ordinances which prohibit certain types of private transportation - in particular, shared-ride taxi and jitney service. The elimination or modification of these ordinances could do much toward stimulating local paratransit services - without public funding - although in some locations where shared-riding has been legalized (e.g., San Diego, Seattle, and Dade County), taxi operators have been slow to offer that option.

Finally, in addition to regulatory actions directly related to transportation, local governments could stimulate the introduction of paratransit options through a number of indirect regulatory actions. For instance, changes in zoning laws so as to restrict parking space development could encourage alternative forms of privately-sponsored transportation service. Furthermore, new regulations could require developers to introduce "public transportation" of some sort in new developments, along with roads and utilities.

In summary, state and local government agencies have made substantial contributions toward the development of paratransit services, and in fact have been the most active actors in the introduction and operation of general

community services. Over the coming years, the importance of their efforts will undoubtedly increase, as the federal government moves toward "getting out of the transportation business."

### ***The Role of the Federal Government***

The role of the federal government in the development and promulgation of paratransit services has been somewhat analogous to that of state governments, in that it has involved funding and other "support-type" activities rather than direct operation. Certain activities, such as demonstration programs and the provision of various types of incentives, have served to promote paratransit, while other actions, such as the enforcement of regulatory barriers (e.g., sections 13(c) and 3(e)) and the long delay in the dissemination of a paratransit policy statement, have restricted expansion of the concept. The different areas of activity are discussed below.

#### Funding

The role of the federal government in providing funds for paratransit services essentially began with the social service entitlement programs such as those created by the Social Security Act of 1935 and the Older Americans Act of 1965. Funds authorized under these programs (e.g., Title XX, Title III, etc.) have been used to provide specialized transportation for the TH. As suggested earlier, as of 1981 there were over 100 different federal programs providing funds for TH service; approximately 65 of these were administered by the U.S. Department of Health and Human Services (HHS). As of early 1982, the federal Administration was pushing for a revamping of the overall social service entitlement program, with most of the individual programs to be consolidated into block grants to the states (at a reduced overall funding level). The impact of such a move on paratransit is likely to be mixed; the block grants may facilitate coordination of services, but the reduced funding level could serve to eliminate needed services.

UMTA has also become involved in funding specialized service, primarily through its "special efforts" requirements, promulgated in 1974; these requirements stipulated that all recipients of transit operating assistance (Sec. 5) establish programs (or at least make efforts) to meet the needs of the E&H. As a result, a number of transit authorities have implemented

special paratransit services, as described earlier in this chapter. UMTA also provides funds for specialized paratransit through the 16(b)(2) program, which makes vehicles available to non-profit organizations. Finally, both HHS and UMTA have provided funding for specialized services through demonstration programs. The Office of Human Development Services (OHDS) of the then Department of Health, Education and Welfare (now HHS) sponsored five demonstration projects in 1978-79 to test out various forms of service coordination, while UMTA's office of Service and Methods Demonstrations (SMD) has sponsored a number of TH projects over the past several years.

In addition to the above programs, service for the TH has also been provided with funds from FHWA and UMTA (the Section 18 program) and the Community Services Administration (CSA), through the Community Action Program. These services - also generally available to the general public - have been implemented predominantly in rural areas (Section 18 is limited to rural locations). Section 18 grew out of FHWA's "Section 147" Demonstration Program, which provided funds for over 100 rural demonstration projects beginning in 1974. The CSA developed out of the Office of Economic Opportunity, which was created during the "War on Poverty" of the 1960's. (As of this writing, the CSA was scheduled to be drastically reduced in scope.)

In terms of providing funds for general community paratransit services in urban areas, the federal government has had a smaller role than it has for specialized and rural services. As discussed earlier, some transit authorities have sponsored suburban community services; the funds for these services may, but do not necessarily, come from UMTA (i.e., they may come from the local match). The only federal program including funds designated especially for general community paratransit services has been the SMD program. UMTA has sponsored a number of demonstrations through this program, including the Haddonfield and Rochester dial-a-ride systems. Despite the well-publicized failure of certain of these services (most notably the Haddonfield project) to attract sufficient local funding to continue operating after the close of the demonstration period, these demonstrations have played



important roles in furthering the development of paratransit. They have produced valuable lessons in the design, implementation, and operation of various types of general community service.

In the ridesharing area, the federal government has been quite active over the past decade. UMTA's involvement has, again, been chiefly through the SMD program. In establishing ridesharing programs within transit agencies (in Norfolk, Minneapolis, San Francisco, and Knoxville), the program has helped to downplay the widely-perceived transit-ridesharing conflict. Of greater significance in promoting ridesharing, however, have been two FHWA demonstration programs. As discussed earlier, the Carpool Demonstration Program of 1974 resulted in over 100 projects. Whereas over two-thirds of these were eventually terminated, the overall program produced valuable lessons regarding approaches to the promotion of ridesharing (i.e., the importance of the employer). A more recent program - the National Ridesharing Demonstration Program (1979) - sponsored grants to implement innovative ridesharing programs.

In addition, the federal government provides substantial ongoing assistance for the development of ridesharing programs through federal-aid highway funds; Federal Aid Urban Systems (FAUS) funds are the single largest source, but Federal-Aid Primary and Secondary funds, as well as Highway Planning funds, can also be used for ridesharing purposes by state and local bodies. FHWA has also introduced two new programs which provide funds for ridesharing projects: the National Ridesharing Discretionary Program, which grew out of the National Ridesharing Demonstration Program, and Comprehensive Transportation Systems Management Assistance (jointly funded by FHWA, UMTA, and the National Highway Traffic Safety Administration).

Finally, the federal government has, in the past, provided direct subsidies to ridesharing in general through the introduction of certain incentives designed to promote ridesharing. For instance, the Department of Energy (DOE) amended its fuel availability rules, giving vanpools priority access to fuel and removing purchase limitations during times of restricted

fuel availability; however, these rules expired in mid-1981 and were not reinstated.\*

Thus, the federal government has been involved, in varying degrees, in funding a range of paratransit services. Specialized services for the TH in urban areas, and all types of rural services have been funded predominantly at the federal level, while urban general community services have received greater assistance from state and local sources; ridesharing operations have benefited significantly from federal dollars, but have also seen substantial development within the private sector. In all service categories, federally-sponsored demonstrations have allowed innovative concepts to be tested out, and have thus contributed significantly to the development of paratransit as a whole.

The federal government has also played a key role in the advancement of paratransit through the sponsorship of research and development efforts and the dissemination of information regarding both federal and state/local efforts. UMTA, FHWA, and HEW/HHS have, among them, sponsored a great many studies related to all aspects of paratransit's development, operation and impact. Research and evaluation of paratransit has been undertaken by universities, planning bodies, consulting organizations, operators and government agencies.

Finally, the federal government has also sponsored the development of paratransit-related equipment: UMTA has contracted for construction and testing of prototype paratransit vehicles, and has sponsored the demonstration of several types of computerized dispatching equipment; FHWA has developed ridesharing matching software. Whereas federal research and development activities have been marked by some duplication of effort (notably regarding technical studies), the overall results have contributed significantly to improvements in the effectiveness and efficiency of paratransit design and operation.

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\* A more recent action - the Commuter Transportation Energy Efficiency Act (proposed in 1980) - would have included a number of incentives such as tax breaks for employers promoting ridesharing, investment credits for purchase of vans, and tax deductions for fuel used by ridesharing vehicles; however, Congress did not pass this bill.

## Policy and Regulatory Role

While the federal government has done much toward promulgating paratransit concepts through the programs discussed above, it has simultaneously impeded their development through policy and regulatory action (or lack thereof). The absence, until late 1982, of a formal Paratransit Policy Statement, coupled with several major regulatory barriers, has limited the participation of certain actors, and hence the introduction of paratransit in many locations.

The long-promised Paratransit Policy Statement does not provide any new funding to implement new services, but it should "legitimize" paratransit services as viable public transportation options. By encouraging the participation of the private sector in the transportation planning process, and by recognizing the value of paratransit options in serving certain types of needs, the Policy Statement could open the way for a new approach to the provision of public transportation in general. In light of current plans to eliminate transit operating assistance, such a shift could prove essential to localities seeking to maintain public transportation service without federal aid.

The Policy Statement should help establish a climate for further expansion of paratransit services. However, as long as there remain specific regulatory barriers to the development and provision of paratransit services, the statement, in itself, will be of limited effectiveness. Therefore, a crucial future role for the federal government vis-a-vis paratransit is the removal of legal and regulatory constraints such as those posed by sections 13(c) and 3(e)\* of the UMT Act of 1964. While these regulations have not constituted real barriers in the majority of paratransit efforts, they (notably 13(c)) have blocked a number of attempts to introduce paratransit service, and have considerably slowed down implementation in other instances.

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\* Section 13(c) is a clause designed to protect transit labor from "a worsening of its position" as a result of the introduction of a new service. Section 3(e) is designed to protect existing private operators from competition from new services. Both clauses apply only where the new services are receiving federal funds.





UMTA-sponsored prototype paratransit vehicle

(photo:U.S. DOT)

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Another regulatory area in which the federal government might play an important role is in influencing the states and localities to modify or remove their own regulations which constrain the development of paratransit services. Such barriers include local laws prohibiting shared-ride taxi and jitney, and state laws restricting vanpooling and buspooling. The federal government has no direct control over these laws, but the Paratransit Policy Statement or other policy directives (perhaps tied in with funding) could have a significant influence on many states and localities.

Finally, it should be pointed out that the federal government has made strides in modifying certain regulations which, in the past, served to limit paratransit's development. These regulations include U.S. DOT's accessibility rules under section 504 and various HEW/HHS rules governing restrictions on

use of entitlement program funds for transportation of non-clients. The 504 rules, although not finalized at the time of this writing, have been tentatively modified so as to allow for "local option" rather than requiring fixed route transit accessibility. This change has considerably improved the prospects of implementation of specialized paratransit services.

Whereas the 504 changes will benefit the non-agency-affiliated TH, the easing of HHS program eligibility requirements and restrictions on "mixing" clients (of various program) has aided the clients of all social service agencies, and has enabled the coordination of different services; this has somewhat improved the efficiency of specialized service provision and/or expanded the availability of service. Various forms of coordination have been attempted - at the local level - with varying degrees of success; an important future direction for the federal government in general would be to foster greater coordination at the federal level among all transportation programs (i.e., within both HHS and DOT) targeted to similar markets. As operating costs continue to rise and available funding is reduced, the need for more efficient service delivery - in all service areas - will become increasingly acute.

The federal government has thus played a variety of roles in the development and evolution of paratransit services; these roles have served to refine and expand the various concepts, as well as to impede their development. Ongoing funding programs, demonstrations of innovative approaches, and research, development and information dissemination efforts have been important elements in promoting paratransit; such activities should certainly be continued in light of the role paratransit has been shown to play in meeting various federal goals (energy conservation, mobility, etc.). In addition, the federal government should make every effort to eliminate regulations which have served as barriers to the introduction of paratransit services and the participation of all types of actors. The Paratransit Policy Statement should be a useful first step in this direction.

### **Summary**

In summary, then, the number of actors involved in paratransit helps maintain the strength and diversity of the service options; paratransit is provided not only by the traditional "third party" transportation operator but also by activity centers which generate the need to travel, and individual

entrepreneurs and travelers. At the same time, however, conflicting perspectives have, in the past, limited paratransit development. Transit authorities, and particularly transit unions, have generally been interested in "protecting" their current position; too often this has tended to block innovation altogether, or at least kept it from happening in the most cost-effective way. The taxi industry has been predominantly interested in profit-maximization, as well as protection of its own services. This has also tended to restrain paratransit development on the part of both public agencies and other private companies and entrepreneurs. The risk-averse nature of many taxicab companies has also kept the taxi industry from innovating in some locations, even where regulatory barriers do not exist. Activity centers have typically been interested in their own employees/customers/clients, and have made little attempt to interface with other transportation activities. Ridesharing agencies have often focused on one service concept to the exclusion of others. Duplication of efforts at the state and federal levels have produced inefficiencies in the provision of local services. Finally, entrepreneurs have often been faced with significant regulatory barriers, as well as opposition from many of the other actors. Unless better cooperation can be achieved among the various actors, and until these groups adopt the view that they are not in competition with each other, then paratransit will never reach its full potential.

Fortunately, there have been advances made in this direction, as discussed in this chapter. The realities of dwindling public funds and escalating operating costs in public transportation, coupled with decreasing profits among private operators, have begun to forge new public-private alliances. As each of the above actors realizes the advantages - and often necessities - of cooperation, the provision of all transportation services will certainly benefit. The next chapter of this Overview examines future directions for paratransit as a key element of the overall future public transportation system.



## ***4 Moving Toward the Future***

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Our assessment of the future potential of paratransit has led to the conclusion that paratransit, as a set of options, shows potential for expansion. Certain factors point to an increase in both demand and opportunities for paratransit services over the coming years. This chapter reviews those factors likely to influence the future development of paratransit, the barriers which must be overcome, and the likely future directions for paratransit's development.

### ***Factors Likely to Influence the Development of Paratransit***

The future development and expansion of paratransit options will depend, to a large extent, on a number of factors related to energy, economic, and land use/development trends, as well as attitudinal changes and governmental policies.

The first set of factors to be addressed is that related to energy and the economy, specifically dealing with automobile operation and ownership. While the price of gasoline stabilized in 1981 (and even dropped slightly in early 1982) following several years of dramatic increases, future price and availability levels are rather uncertain. Most analysts continue to believe that fuel price increases will outstrip inflation over the next decade. International events such as war in the Middle East (a not unlikely event) would have a dramatic impact on both price and availability. Increasing fuel costs, combined with the rapidly increasing cost of automobile purchase, financing (particularly at 1981-2 interest rates) and insurance, will make automobile operation increasingly expensive, even with gains in automotive fuel economy taken into account. While no one is currently predicting increases in automobile costs sufficient to cause a major decrease in usage, even moderate increases will cause some persons to seek lower cost alternatives to current travel patterns, be it through the use of ridesharing, shared auto cooperatives, or greater use of public transit/paratransit modes. Even a 10% reduction in single-occupant auto use has significant implications on the market for such services.

Increased automobile operating costs or, to a much greater extent, restricted fuel availability, will help reinforce the current trend to

increased housing density in inner suburban areas.\* Such increased density will support more forms of public transportation in general. In particular, there may be increased potential for new neighborhood-based paratransit services (discussed later in this section). At the same time, however, the dispersion of activity centers, including places of employment, shopping centers, medical treatment centers, etc., continues (although downtown sections of many cities are being strengthened simultaneously). Since conventional fixed route transit systems are generally less effective in suburban areas than in inner city areas, opportunities for community-based paratransit services and ridesharing options should grow.

Both of these development trends are likely to continue over the coming years; it is unclear which will predominate. In light of the current energy and economic situations, settlement patterns may continue to swing toward higher densities (i.e., more concentrated suburban development, as well as the "return to the city"), as people seek to minimize commuting distances, or locate closer to transit lines. On the other hand, the economy may improve over the coming years, spurring greater low density suburban expansion. Because of the flexibility of the various service options, however, paratransit can play a role within either scenario (or even a combination of the two, perhaps the most likely scenario); the exact nature of development will dictate the most appropriate combinations of services.

For example, the availability of local service in low density areas (providing both circulator and feeder service) could enable low density development to continue in an era in which the single-occupant auto becomes a luxury which can be afforded by only a limited segment of society. It is conceivable that developers would be willing sponsors of transportation services under such conditions, as they have indeed begun to do in cities such as Houston.

In areas where rising auto operating and new housing costs help to reinforce the movement back to the city and the push for revitalization, there

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\* This trend has resulted from: 1) the development of most available land in these areas; 2) past increases in auto operating costs which makes people more willing to live in environments where they can get by with less automobile use; and 3) sharply rising housing costs, which makes dense, lower cost housing more attractive.

may be other opportunities for paratransit. Inner city living is typically characterized by lower auto ownership levels than is suburban living (although it is only in very dense areas with extensive transit service, such as mid-town Manhattan or Boston's Beacon Hill, where significant numbers of upper-middle income households live with no automobiles). In all inner city neighborhoods, walking and transit serve many of the trips which would be served by auto in the suburbs. However, there may be potential for neighborhood-based services (e.g., local circulator/feeder or ridesharing matching services). In economically depressed areas, the availability of good neighborhood access may be a factor in encouraging revitalization. In an alternative scenario for some inner city areas, increasing fixed costs of auto ownership (including parking) may generate interest in shared auto use concepts.

There are also more subtle, predominantly attitudinal, changes occurring which support a shift to greater paratransit usage. Alvin Toffler, in his recent book The Third Wave (13), views society as moving away from the "mass culture" identified with the industrial era he calls the "Second Wave" of society. As examples of this shift, he points to a greater emphasis on the individual, be it through a flexible working hour arrangement, flexible fringe benefit packages, etc. He also points to the growing role of "do it yourselfers." As another example Toffler states:

This mass market has split into ever-multiplying, ever-changing sets of mini-markets that demand a continually expanding range of options, models, types, sizes, colors, and customizations. Bell Telephone, which once hoped to put the same black telephone in every American home - and very nearly succeeded - now manufactures some one thousand combinations or permutations of telephone equipment from pink, green or white phones to phones for the blind, phones for people who have lost the use of their larynx, and explosion-proof phones for construction sites. Department stores, originally designed to massify the market, now sprout "boutiques" under their roofs, and Phyllis Lowell, a vice president of Federated Department Stores, predicts that "we will be going into greater specialization ... with more different departments."

Toffler believes that the uniformity required by the mass production of the industrial society is less necessary in the "post-industrial" society, where only 9% of the population (a shrinking number) is involved in manufacturing.

This shift from a culture designed around the masses to one based on the individual (or from a "mass market" to sets of "mini-markets") is entirely



consistent with the paratransit philosophy. Paratransit services are designed to serve these "mini-markets." In fact, Toffler goes on to state:

The de-massification of time has other consequences too. And we can already begin to see its effects on transportation. The Second Wave insistence on rigid, mass work schedules brought with it the characteristic rush-hour crush. The de-massification of time redistributes traffic flows in both space and time.

Along with such shifts we must consider another attitudinal shift that may have some bearing - the growing willingness to "share" ownership and use of certain goods and objects. This has been manifested largely in the housing market, where condominiums and cooperatives have become more accepted home ownership alternatives, and "time-sharing" has become a standard approach to vacation home ownership. This shift has obviously been spurred by economic factors; the same economic factors may also make Americans less wedded to the "single occupant" automobile mentality that has prevailed since World War II. Americans may thus become more willing to experiment with ridesharing, vehicle-sharing and other paratransit "experiments."

The final factor to be discussed here may actually produce the greatest impact on the market for paratransit services. The federal government has announced its intention to eliminate public transit operating subsidies. At the same time, fiscal constraints at the local level are making it difficult for some areas to maintain current funding levels, let alone make up for the loss of federal funds. The net result (assuming funding cuts do take place) will be a reduction in conventional public transit services. This should result in greater interest in, and opportunities for, lower cost alternatives, including ridesharing, jitneys, shared-ride taxi, etc. In addition, there will be greater need to keep the costs of public service down, through such strategies as peak hour supplements and greater use of private operators. In fact, growing dissatisfaction with "public services" in many locations may generate a strong demand for greater participation by the private sector in public transportation. Such attitudes should serve to generate increased paratransit activity.\*

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\* An example of the new attitude towards public transportation can be seen in the Chicago suburbs, where commuters recently (1981) reacted to a sharp increase in commuter rail fares by forming their own cooperative buspooling arrangements.

Thus, a variety of trends suggest that the market for paratransit services should increase. The challenge is to create an environment which fosters the development of service options which meet the growing demand in a cost-effective and efficient manner. The next section discusses the remaining barriers to creating such an environment.

### ***Barriers to Future Paratransit Development***

A variety of factors have served to constrain the growth of paratransit in the past and could continue to do so in the future. These factors include the publicity received by paratransit "failures," and the rhetoric voiced by both proponents and opponents of paratransit. However, there have been a variety of other factors at play as well. For paratransit to achieve considerable growth, it will be necessary to overcome the various barriers discussed below.

Perhaps the most important constraint is the lack of a single, recognizable paratransit constituency. This is, perhaps, the inevitable result of the diversity of paratransit services and objectives. Nevertheless, even for a particular form of paratransit, there is often no unified group supporting the concept. This has begun to change somewhat, as special interest groups advocating ridesharing or specialized paratransit services do now exist. However, the lack of a broad-based constituency has produced little in the way of pressure on local governments or the federal government to institute programs or policies in support of paratransit. The fragmentation of responsibility for paratransit on the federal level has also played a role in limiting paratransit's expansion. In some cases, paratransit has had to be "retrofitted" into a process (e.g., the traditional transportation planning process) which had been initiated with no consideration for paratransit.

The fact that paratransit serves to bridge the gap between public and private transportation has sometimes been challenged by the traditional distrust of the public sector for the private sector and vice versa, as well as the differing objectives of the two groups. It is only in the past few years that these differences have been reconciled to a significant extent.

As with any new concept, paratransit has had to contend with resistance on the part of the "establishment" and an inherent desire to retain the status quo. In the case of paratransit, this resistance has been encountered from

labor and management in both the public and private transportation sectors. This combination of groups potentially offering opposition has made it difficult to implement paratransit services in some areas, since what one group favors, another group typically opposes. This resistance has often been strengthened by concrete regulatory barriers. For instance, the "13(c)" labor protection clause has been involved in numerous attempts - some of them successful - to block paratransit services. Similarly, the "3(e)" clause protecting private operators has been the focus of a number of actual and threatened suits by private operators.

Past actions on the part of particular transportation modes to restrict other modes have also had a longlasting impact on paratransit. In particular, the street railway companies managed to have jitneys outlawed in all but a handful of cities in the 1920's; these restrictions continue to hold in most locations. Other local ordinances - particularly those which prohibit shared-ride taxi, restrict entry to the taxicab market, or prohibit "competition" with publicly-provided fixed route service - also inhibit paratransit innovation. Furthermore, in many locations paratransit services "fall between the cracks" when it comes to regulations, and are classified as neither fixed route bus nor taxi. This regulatory ambiguity often makes it difficult for a new service to be implemented.

This is not to say that an area would be flooded with paratransit service if all regulatory barriers were lifted. On the contrary, evidence suggests that the private sector moves rather slowly to introduce new services. For example, the legalization of shared-ride taxi service in Seattle in 1979 has not, as of this writing, led to the initiation of any new shared-ride services. On the other hand, the legalization of jitneys in San Diego has created some new services. The generally conservative nature of the private sector is one factor that has probably restrained paratransit's growth. However, over time, one can certainly expect the "deregulation" of public transportation modes to have same impact on paratransit availability.

Finally, paratransit options have probably suffered because they are not "glamorous." Capital-intensive systems, such as light rail or downtown people movers, offer very concrete results of investment, and are thus better able to capture the imagination of the population than are low cost, low visibility paratransit services. This is likely to continue to be the case, at least until such time as economic realities force the rejection of high cost options



in favor of solutions which limit the level of public commitment. This is exactly what appears to be occurring today, particularly with the planned phase out of new rail starts, as well as the planned elimination of federal transit operating assistance. Thus, the economy and changes in federal funding priorities are likely to create an improved climate for paratransit, helping to overcome certain of the existing barriers discussed above.

### ***Future Directions in Paratransit Service Provision***

As explained above, various changing conditions are likely to increase the demand for flexible, low cost options to supplement the private auto; meanwhile, the decreasing availability of public funds will dictate the need - and opportunities - for low subsidy options to supplement and complement mass transit. The market for current paratransit options, such as commuter ridesharing and general community demand-responsive services, should thus continue to grow. In addition, there should be opportunities for new types of services and new service delivery frameworks. In this section we briefly discuss some possible future directions for paratransit.

#### Trends in the Major Paratransit Markets

##### Commuter Ridesharing

Ridesharing options have been shown to be viable commuting modes, which, over the past decade, have been increasingly accepted by individuals, private employers, and government agencies. Ridesharing can provide a low cost travel alternative for commuters, can produce tangible benefits for employers, and can help achieve national goals such as reduced energy consumption.

Carpooling is, and will doubtless continue to be, the dominant ridesharing mode. Estimates of future carpooling levels are difficult to make; however, it would certainly not be unrealistic to suggest that a 20% (or greater) increase in the amount of carpooling is possible, depending on the rise in the cost of gasoline and the extent to which employers and the government increase the level of ridesharing initiatives.

Vanpooling is the next most common form of ridesharing, with current estimates of upwards of 10,000 vanpools in operation and that number increasing rapidly. The future level of vanpooling will depend to a large extent on the economics of van operation and trends in settlement patterns (and resulting commuting distances), as well as the role employers accept in

vanpool provision. Significant increases in vanpooling are certainly possible. With over 4 million persons in the U.S. commuting over 25 miles to work as of 1975 (10), the potential market for vanpoolers is clearly considerably larger than the approximately 120,000 persons who currently utilize this mode.

Buspooling is likely to remain the least intensively used form of ridesharing, because of the inherently difficult task of grouping together large numbers of passengers. Nevertheless, buspooling remains a very cost-effective form of commuting in situations where it is feasible.

Of all of the factors which will influence the future of ridesharing, two stand out as potentially having the most significant impacts. The first is the price and availability of fuel. If gasoline becomes scarce, or if prices rise substantially, there is likely to be a substantial shift to ridesharing modes. The second factor is the role of the employer. All of the evidence to-date indicates that the role of the employer--as well as that of the multi-employer transportation management association--is key in encouraging ridesharing participation. If employers accept a greater responsibility for employee transportation, as they may if energy prices soar or energy becomes less available, then ridesharing participation is likely to increase substantially.

Public sector (or, in some cases, joint public/private) ridesharing initiatives which have flourished in recent years will undoubtedly have an impact as well. Whether a ridesharing agency serves as an advocate for ridesharing - providing ridesharing with the constituency it often lacks - or as a more impartial broker - which utilizes ridesharing as one of many modes - such an organization clearly helps legitimize the concepts, and makes ridesharing modes available to many persons who may not otherwise have such options.

Finally, governmental actions, on the local, state and federal levels can be important in encouraging both individuals and employers to support and participate in ridesharing activities. It is clear that ridesharing has been established as a legitimate form of public transportation. Under the right conditions, its future growth should be significant.

## Specialized-Services for the Transportation Handicapped

Specialized (i.e., door-to-door) transportation services for the TH have proven to be quite important in improving the level of mobility, and consequently the quality of life, of persons unable to use conventional transit. These services have experienced substantial growth over the past decade, as transit operators and government agencies have joined social service agencies as major providers. The keys to the future growth of such services are the nature of transit agencies' responses to the U.S. DOT's requirements under Section 504 and the future levels of federal funding for both conventional transit and social service programs.

Demographic trends and projections suggest that there will be growth in the demand for door-to-door service, in that the size of both the elderly and handicapped populations will increase. Furthermore, improving medical procedures are allowing people to live longer, and the number of elderly and handicapped persons in the work force and, therefore, in need of access to employment sites, is expected to increase, as well. While many of these people are able to use transit and/or have access to automobiles, reductions in federal subsidies for (and likely subsequent service reductions in) the



Handi-Lift, a privately-operated service funded by San Antonio's transit authority (photo: U.S. DOT)



former and rising costs of operating the latter will dictate a greater need for alternatives, especially among the low income groups into which many of the elderly and handicapped fall.

The various organizational options for providing specialized paratransit services which have developed over the past decade, including social service agencies, non-profit organizations, transit operators, and governmental agencies will continue to evolve over the coming years, with their relative roles significantly affected by the rules surrounding Section 504. As of the end of 1982, U.S. DOT's "accessibility" regulations allow substantial local flexibility, on at least an interim basis, in meeting the accessibility intent of Section 504. This represents a sharp contrast from earlier regulations calling for full fixed route accessibility; however, the new regulations have not been finalized, and the final disposition of the issue is unclear. If "local" option remains, the level of paratransit activity should increase, and at least some transit operators will become more involved in paratransit. For the most part, paratransit services will be operated by private contractors, although some transit agencies will operate some portion, if not all, of a service. In some cases, general community paratransit will be used to serve the TH. Some transit operators will develop paratransit services without worrying about coordination with social service agency providers (in the hope that some agencies will cease operations once a reasonable quality public paratransit service is in place); in other cases, specialized service will be based on coordination with existing providers.

In the unlikely event that the 504 rules do ultimately swing back to full fixed route accessibility, the role of the transit operator in the provision of paratransit is likely to be diminished drastically, if not eliminated altogether. On the other hand, social service agencies are likely to continue to provide services, though under the constraints of new funding realities. Transit authorities in some areas will continue to coordinate with social service agencies, some of which will introduce feeder services.

Finally, in terms of the future directions for social service providers, the key issue beyond 504 will be making the most cost-effective use of dwindling funds. Various forms of "coordination" - at both the operational and administrative levels - have been attempted over the past several years and have produced mixed results. In general, though, while some participants have benefited from arrangements ranging from simple cooperation to total

consolidation of participating services, many agencies have actually experienced higher costs, and, often, increasingly complex administrative requirements as a result of such efforts. For this reason, we may see a decreased emphasis on formal coordination in the future, with greater reliance instead on mechanisms such as user-side subsidies within an "open" marketplace. On the other hand, coordination in the form of brokerage services may play a greater role, as discussed later in this section.

#### General Community Paratransit Services

Paratransit designed for the general community has taken, and will continue to take, a variety of organizational and operational forms. Included in this category are local circulator/feeder services (e.g., "dial-a-ride" and jitney), shared-ride taxi services, and activity-center-sponsored shuttle services. These may be initiated and/or operated by transit agencies, municipal governments, community organizations, private operators, business owners/developers, or individuals. General community services have fulfilled various roles in pursuing local transportation goals, and offer the potential for playing expanded roles over the years ahead.

As mentioned earlier, the majority of general community paratransit systems introduced to-date have been implemented in smaller cities. Recently, however, there has been an increase in paratransit activity in the suburban portions of major metropolitan areas. In some cases (e.g., Orange County, CA, Chicago, and Boston), transit authorities have provided technical assistance and funding to suburban areas, which in turn have contracted for local service, typically with private operators.

Now, with the possible elimination of federal operating assistance, transit authorities may become more willing to phase out marginal fixed route suburban services. Since rising suburban densities and increases in auto operating costs will create greater opportunities for transit service, private services - operating either independently or under contract to municipalities, neighborhood groups or the transit authority itself - could replace some of those services eliminated due to budget cutbacks. If local regulations allow, private entrepreneurs could also begin to fill the gap through jitney and other shared-ride services.

The future of the public transportation system is likely, therefore, to contain more in the way of flexible paratransit services, typically operated

by the private sector. Unlike the earlier general community services, which were primarily door-to-door in nature, future services are more likely to display characteristics closer to those of fixed route, perhaps through options such as route or point deviation. Door to door service options have been shown to be considerably more expensive to operate than less flexible options; therefore, in many areas, demand-responsive arrangements are likely to be reserved primarily for services targeted to the TH. This type of change has already been demonstrated in many areas, including Ann Arbor - for a long time the site of one of the most successful demand-responsive transportation demonstrations. Paratransit services are likely to see the most widespread use in suburban areas and smaller cities, but should see some use in inner city areas as well. Urban neighborhoods and various types of activity centers may well become active in introducing paratransit services; some of these possibilities are explored below.

#### Newly Emerging Paratransit Options

As economic conditions and development patterns change, new actors and institutional approaches are likely to achieve increasing importance in the initiation and operation of paratransit modes. Some of the more interesting possibilities are explored below.

#### New Organizational Options

Unlike conventional transit, paratransit service may be initiated and operated by any of a variety of organizations or individuals. Recent trends suggest that some new organizational options may play expanded roles in the future.

- Activity Center Services - Traditionally, transportation has been provided by a third party, such as a transit authority, or by an individual (i.e., driving himself or carpooling). However, as indicated by the growing number of employer-sponsored ridesharing programs and social service agency-sponsored transportation services for the TH, initiatives for providing transportation are increasingly coming from organizations that "create the need for travel," in other words, for whom transportation is an ancillary but necessary function. As the costs of traveling by private auto escalate, it may become even more necessary in the future for such activity centers to assume greater degrees of responsibility for insuring access to their own activities.



The concept of transportation services being initiated and provided by activity centers makes sense when one considers the advantages of such an approach. Activity centers will develop service for a variety of reasons, depending on the nature of the activity involved, the availability of existing transportation options, and the pressures exerted by trends such as limited energy availability. However, the general rationale will be to facilitate use by current and potential patrons. For example, a shopping center may be able to increase (or at least maintain) business by providing non-auto access; this may be especially important during periods of limited energy availability or high fuel prices.

In addition, the local community (and possibly the regional transit authority) may benefit from the private provision of transportation service. Such a service may obviate the need for public provision of certain services. For example, if a developer implements a service, a municipality or transit authority may be able to avoid extending transit into a new subdivision.

Furthermore, the activity center approach offers certain advantages over the development of more conventional transportation modes. Service can be tailored more directly to particular user needs, since a single destination (or in some cases, origin and trip purpose) is generally involved and the temporal nature of demand can actually be influenced by the supply. Thus, activity center-developed services can fill well-defined travel needs which may not be adequately (or as sufficiently) met by public transportation. Such services will be initiated where the center management perceives direct benefits, such as increasing/expanding business, reducing parking needs or improving public relations.

A significant increase in the introduction of activity center services may hinge on three basic factors: 1) the continuation of increases in fuel prices (or reduced availability of fuel); 2) the introduction of governmental actions restricting energy availability or sharply increasing costs; and 3) the introduction of governmental controls/restrictions on development. This last factor could take the form of reduced parking allowances or requiring new developments (e.g., shopping malls, subdivisions, etc.) to provide some form of "public" transportation (i.e., the "transit as utility" concept). This could be mandated for energy conservation and environmental reasons, although

it could simply serve to discourage new development. If activity centers are to be expected to play a more significant role, however, they must be able to participate in the transportation planning and funding processes.

● Neighborhood Cooperatives - Activity centers represent one type of organization that may initiate paratransit service. On a somewhat larger scale, paratransit services have often been initiated on a community-level basis - for example, by a suburban municipality. Another option lies somewhere in between these two approaches: paratransit can also be initiated at a neighborhood level. A neighborhood-based system would typically be smaller scale than a community-wide system, but represents service initiated at the residential end, rather than the destination end of the trip, as is the case with most activity center services. While third party organizations, such as neighborhood planning agencies, can and have sponsored services, an alternative is for neighborhood residents themselves to initiate service through a cooperative framework. As the costs of operating private automobiles increases, and rising transit costs cause service cutbacks, the cooperative framework may offer a viable approach to the provision of localized transportation service. Transportation cooperatives have been implemented predominantly in rural areas to date, but there would seem to be potential for such an approach in urban settings, as well.\*

The cooperative management offers certain advantages over other forms of provision of transportation services. Services can be provided at lower costs than are possible through contracting for service with an existing operator. For example, retired persons or homemakers with extra time can serve as drivers or call-takers in a cooperative-run service. Similarly, underutilized vehicles (e.g., second cars), can be pooled or deployed to provide local service. Furthermore, by being planned, implemented and operated at the neighborhood level, a service can be quite responsive to changes in the service environment and variations in local demand. Formation of a cooperative might therefore be an appropriate solution to the intra-neighborhood transportation

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\* The Reston Commuter Bus is an example of a system initiated as a cooperative to fill a particular need within an urban area. The suburban Chicago buspooling cooperative mentioned earlier is a more recent (mid-1981) example. Thus, there is some precedent for the cooperative concept in urban areas.

needs of a central city neighborhood having a low auto ownership level (and/or limited parking space) and inadequate service by other modes of transportation.

A neighborhood transportation cooperative can benefit both the members and the neighborhood in general, by improving local and regional access (e.g., by interfacing with transit service). This can help improve local safety (especially at night, when it is unsafe to walk through many areas), promote economic development, improve community pride, and provide a certain amount of local employment.

The service provided by the cooperative might be a local circulator-type bus, a demand-responsive door-to-door service, a ridesharing matching service (e.g., for the work trip, as well as for local shopping or other types of travel), an automobile sharing arrangement (see Public Use of the Auto, below), or a general "brokerage" operation utilizing a range of services (see Brokerage, below).

Neighborhood cooperatives may begin to develop as interest in central city neighborhoods grow, persons with various technical/management skills move to these areas, cooperative activity in other areas (e.g., housing, energy provision) increases, and transit funding problems cause service cutbacks. However, the lack of seed funding and technical support are likely to hamper the initiation of cooperatives, even where a local need is fully recognized. Federal demonstrations are thus important in testing the concept and providing "models" for neighborhoods to employ in developing their own services. Seed funds would help to get projects off the ground (e.g., through professional planning assistance and, perhaps, purchase of vehicles); these could come from combinations of federal and private sources. Day to day operations on the other hand, would have to be covered through private contributions, membership fees, and volunteer efforts.

#### Coordinating Services: The Brokerage Approach

The fact that paratransit services can be initiated and operated by many different organizations, both public and private, is one of the strengths of the concept; at the same time, it is one of its weaknesses. A multitude of operators can lead to service duplication and/or inefficient use of resources, as well as a syndrome in which each group feels the need to "reinvent the



wheel." For paratransit to be most effective, there must be some mechanism for ensuring service coordination, or "aggregating the disaggregate" service components.

One approach suggested for achieving such coordination has been labeled "brokerage." On the simplest level, transportation brokerage involves the matching of travel demands with the most appropriate supplier. Obviously, the exact role is somewhat more complex, but the intent is to make most efficient use of existing resources while best serving transportation needs.

As discussed earlier, the most widespread use of the brokerage approach to-date can be found in the ridesharing agencies being implemented in major urban areas throughout the country.\* Ridesharing agencies basically try to "match" individuals into carpools, vanpools, buspools, and, generally, transit as well. Ridesharing agencies typically work with and support employers interested in ridesharing; by serving as a central information and technical support group, a ridesharing broker obviates any employer's need to "reinvent the wheel."

Ridesharing agencies differ from the "pure" form of brokerage in that they are advocates for a particular set of modes - in this case, ridesharing. Nevertheless, ridesharing agencies work to make the most efficient use of the set of services that constitute ridesharing. These brokerages are not comprehensive, in that they focus only on work trips, but they have demonstrated the effectiveness of the brokerage-type approach.

Transit authorities may represent a logical location for more comprehensive brokerage activities, in that they obviously have a strong base of knowledge of local transportation needs and options, as well as control over a portion of existing service. Indeed, some transit authorities, such as the Orange County Transit District and the Tidewater Transportation District Commission, already play a brokerage-type role, contracting out certain transit and paratransit services in suburban areas and also acting as ridesharing agencies. However, a transit authority obviously has an inherent bias towards transit and, as such, is not the impartial broker envisioned for the concept.

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\* The other area in which brokerage has seen some use is the coordination of specialized services for the transportation handicapped.

Of course, ridesharing agencies could also be expanded into broader-based brokerage organizations. For example, a ridesharing agency could disseminate information on all transportation modes, and work with municipalities and/or developers to design local service, perhaps identifying a set of operators able to provide that service. The broker could also help coordinate social service agency transportation, as has been done in Pittsburgh and elsewhere. On a neighborhood level, a broker could be responsible for coordinating a volunteer driver/informal carpool program, providing information on services to residents and on funding opportunities to neighborhood agencies, while serving as a neighborhood ombudsman in dealing with a regional transportation authority. At a minimum, a brokerage organization could serve as an information exchange center to ensure that all paratransit operators in an area benefit from knowledge gained elsewhere and are aware of funding and technical assistance opportunities.

#### A Different Perspective on Paratransit Provision: Public Use of the Auto

With the exception of ridesharing, most of the forms of paratransit demonstrated to-date approach the transit edge of the spectrum of services constituting the concept. It should be kept in mind, however, that paratransit can also include services that approach the other end of the spectrum - the private auto.

Regardless of future energy/economic trends, the automobile will undoubtedly continue to be the preferred mode of travel for the majority of Americans. Use of the auto, however, can be made considerably more efficient, through a variety of shared use arrangements. These options, which can be broken into "trip-sharing" and "vehicle-sharing" arrangements, and can be considered together under the mantle "public use of the auto." Trip-sharing arrangements such as carpooling have seen widespread use in this country, while vehicle-sharing arrangements (other than traditional services such as car rental, and corporate motor pools) have seen much more experimentation in Europe.

Trip-sharing options, including carpooling and volunteer driver arrangements, have been extensively used for many years, and will undoubtedly continue to expand: carpooling because of its role in reducing the cost of the commuting trip; volunteer driver arrangements because of their usefulness in helping to provide mobility to the elderly and poor, especially in rural

areas. A third trip-sharing option - organized hitchhiking - has been introduced in several U.S. locations, but has met with little success to date, in large part due to safety concerns and reliability problems resulting from limited registration of drivers and riders. However, organized hitchhiking schemes do offer one significant advantage over carpooling - flexibility in travel times. Thus, this concept may have potential in certain types of situations. For example, such a system may have greater potential if initiated as part of a major employer's ridesharing program. Alternatively, such programs may be appropriate in college towns or other areas with a major common travel destination. In both settings, the system would be implemented in a more controlled environment, where safety problems would be minimized. In each of these cases, some amount of pre-arrangement might also be possible, thereby reducing unreliability without totally eliminating flexibility. Alternatively, such a system might be established as an emergency measure in the event of a transit strike, or as a supplement to fixed route transit service during an energy emergency.

The other forms of auto-sharing arrangements are those in which the vehicle itself (i.e., ownership or operation) is shared. In light of shifting attitudes toward auto ownership and residential location, there may be a potential market for vehicle sharing arrangements in the U.S. Two basic options are "short-term auto rental" (STAR) and "auto cooperatives." These options can reduce the cost of travel to the user, and potentially can result in more efficient use of all transportation modes: if the pricing structure is established so that users see the true cost of an auto trip, rather than the out-of-pocket cost currently perceived, more trips may be diverted to more cost-effective modes such as transit, where such options exist.

Short-term auto rental is a variation on conventional auto rental, entailing faster check-out/check-in procedures and a greater distribution of rental/check-in locations; the vehicles may be rented for very short periods of time (e.g., for a single intra-city trip of a few miles), and rental charges are based on length of use. This concept has been demonstrated in several locations in Europe, including Amsterdam, but has yet to be implemented in the U.S., where studies have suggested limited potential. However, these studies all looked at very large systems, operated on demand by an organization formed expressly for that purpose. The real potential may be in smaller, advance reservation systems operated in inner city areas and using



an existing infrastructure, such as the auto rental industry. Developments in the auto rental industry, including their entry into vanpooling, the establishment of working relationships with retail outlets and auto dealers, and a shift toward non-business travelers, suggest that there is some potential for the introduction of short-term options by that industry. The increased costs of owning an automobile, particularly in inner city areas, may create a demand for short-term auto rental schemes.

An auto cooperative may take one of several alternative forms. For instance, it may be operated by a neighborhood organization, as discussed earlier. Alternatively, persons living in an apartment complex or a single residence may simply share the use (and cost) of an auto, so as to reduce the costs of individual auto ownership. Housing cooperatives or condominiums may offer a framework through which auto-sharing could develop, since these already represent sharing arrangements and provide existing organizations through which to administer the use and care of the shared vehicle(s). Note that the growing willingness of Americans to share the cost of housing, through time-share vacation homes as well as condominiums, may signal a greater willingness to share other high cost products.

An auto cooperative may not be appropriate for persons in need of an auto for frequent trips, such as the commute to work. However, for persons having other alternatives (e.g., transit) and only occasionally needing an auto, it may be a reasonable alternative. The increasing movement "back to the city" could generate interest in such an arrangement, since auto ownership within dense urban areas is often rather inconvenient, due to congestion and limited parking, as well as quite expensive, due to high insurance and parking costs.

In conclusion, the public use of the auto concepts represent a fundamentally different approach (to both public and private transportation) than has generally been demonstrated in the U.S. Excluding the ridesharing options, and with a few scattered exceptions, these concepts have been tested only in Europe. However, the results of European experiments, coupled with changing economic/energy conditions and changing attitudes toward auto ownership and residential locations, suggest that these arrangements could prove feasible in the U.S. as well.

## **Summary**

The set of concepts collectively called paratransit offers a myriad of approaches for meeting transportation needs not well-served by either conventional transit or the private auto. Service targeted to specific market segments (i.e., commuters, TH, shoppers), as well as general community services, can be expected to increase over the coming years, as the public transportation environment changes. Rising auto operating costs and concerns over energy availability will push many travelers to seek lower cost (and less energy-intensive) options for commuting and some local travel. At the same time, a reduction in federal funds available for mass transit will stimulate increased efforts to make public transportation more cost-effective, which should lead to an increase in activity at the community, rather than regional, level. Local paratransit systems, primarily operated by private companies (e.g., taxi and private bus operators) could proliferate, given the right conditions. Furthermore, depending on the transit industry's response to U.S. DOT's "504" rules for transit accessibility, specialized paratransit services for the TH could expand considerably in both number and importance.

In addition to existing options (e.g., carpooling/vanpooling, shared-ride taxi, dial-a-ride), there are several innovative paratransit concepts which have been implemented only on a limited basis - if at all - but which offer potential for expanding the market potential for paratransit. New operational and institutional approaches, including those discussed here, can fill various gaps left by existing approaches and may see growing application as our economic conditions and development patterns change. Given current trends in these areas and in federal policies regarding the subsidization of public transportation, paratransit in all its forms should take on increasing importance over the coming years.

## 5 Conclusions

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### *Paratransit: What Has Been Learned*

Perhaps the most important lesson to be learned from a review of the experience with paratransit to date is that it is not a mode of public transportation per se. Paratransit does represent a set of diverse transportation options, but, more importantly, it represents a departure from traditional public transportation thinking. The paratransit mantle covers a spectrum of services designed around individual or small scale, rather than mass, transportation needs. Paratransit services are initiated and operated by a variety of public and private organization and individuals. In many cases, paratransit bridges the gap between public and private transportation, making it difficult to say whether a service is in the public or private sectors. However, in general, the philosophy of paratransit is one which is concerned with meeting particular transportation demands in a cost-effective manner, and thus is not concerned with the issue of whether service is publicly or privately-oriented.

In reviewing the development of paratransit to date, it becomes clear that there has been a considerable amount of activity in this area - probably more than most persons would realize. Every metropolitan area in the country has some formal paratransit service, be it a ridesharing program, a service for the TH, or a general community service. Paratransit systems also abound in smaller cities and rural areas. Available information suggests that there are literally thousands of paratransit services (with TH services constituting the majority of systems).

Nevertheless, there has been, and continues to be, much debate and controversy over the effectiveness of paratransit in meeting travel demands. This controversy stems from a variety of factors, including the facts that many people continue to look at only a subset of paratransit (e.g., dial-a-ride, or vanpools); and that, for every successful paratransit service of a given type, there is an equally unsuccessful example. In some respects, the controversy over paratransit services is healthy, in that it keeps them in the public eye. On the other hand, the debate can serve to obscure the fact that paratransit is not a particular service concept, but rather a range of services which are designed to serve different needs, but which share the basic philosophy described above.



Indeed, paratransit services are designed around a variety of objectives. For example, ridesharing services have been designed to reduce energy consumption, while at the same time reducing commuting costs. Specialized services for the transportation handicapped are typically designed to increase the mobility of the target market. General community paratransit services have been designed not only to improve mobility, but also to reduce transit deficits in cases where paratransit replaces or augments inefficient conventional transit service. It is therefore rather shortsighted to judge the success of a paratransit service without understanding the objectives it is trying to serve.

The experience with paratransit in the roughly fifteen years since the concept first emerged is marked by both successes and failures. However, this experience has also revealed that some of the failures, and subsequent reaction to them, can be traced more to overexpectations on the part of service initiators or proponents than to problems with the services themselves. Unfortunately, to this day, some paratransit proponents tend to overstate the potential for paratransit. This is unfortunate, in that the continued failure of paratransit to live up to overly optimistic projections can only result in more people viewing paratransit in a negative light. Fortunately, there have been enough success stories to point out the general potential of different paratransit concepts.

One of the criticisms often heard about paratransit is that it serves only a limited market. This is true - when individual paratransit services are considered.\* However, this is entirely consistent with the fact that paratransit services are designed to serve specific, rather than mass, market needs. The size of the market for an individual paratransit service is less important than whether or not that service meets its objective. Furthermore, when taken as a whole, paratransit does serve a sizeable market. Ridesharing modes have been estimated to serve 20% of the work trip market. The number of TH services can only be roughly approximated, but indications are that there are over 3,000 across the country; one could estimate (based on ridership levels of known systems) that they serve 20-30 million trips per year. Furthermore, school bus and exclusive-ride taxi services, which have not been

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\* On the other hand, certain paratransit services have captured significant market shares of very specific types of trips, such as the commute to a particular employment site.

considered in this study but have been treated elsewhere as paratransit, serve a combined total of nearly 12 billion passengers per year, more than twice that served by transit. Thus, it is clear that transportation modes other than exclusive-ride auto and fixed route transit play a significant role in this country.

It has been shown that the nature of the institutional arrangement under which paratransit is provided can have a significant impact on the cost of the service. In both general and target market services, contracting with private operators has usually resulted in lower costs to the sponsoring organization than has (or would) operating through the public sector. This cost differential is especially great in areas in which transit employees are unionized and have high wage rates in comparison to the private sector. In smaller communities, however, general community services have often been operated by public agencies at costs comparable to those possible in the private sector, because of low prevailing wage rates.

In terms of cost-effectiveness, limited demand for a particular paratransit service can make that service rather expensive, especially if it is operated within a public transit framework (using high priced labor). High labor costs can, in some cases, be manageable when spread across a high ridership; when spread across the relatively low ridership of many paratransit systems, these high costs may prove prohibitive. This does not mean that paratransit services are not cost-effective public transportation options; rather, it suggests that the service delivery framework (for a particular service) must be appropriate for the size and nature of the market to be served. One has only to look at the low costs of certain paratransit services with very limited ridership, such as vanpool programs, to see that paratransit options can indeed be very cost-effective modes.

The organizational options through which paratransit can be developed and operated are considerably greater in number than those available for conventional transit. In addition to "third party" services operated by transit authorities or taxi companies, paratransit may be provided directly by the activity center which creates the need to travel. Employer-sponsored vanpool programs and social service agency services for the TH are examples of this approach. Since such services can be developed with a more complete understanding of the needs of the target market, they may be extremely effective in serving that market. Certainly, the employer-sponsored vanpool

programs such as 3-M and TVA are evidence of this possibility. These types of service represent a "bottom-up" rather than "top-down" approach to service initiation. Paratransit can also exist at another level - some paratransit services are initiated and/or provided by an individual. Carpools are one example; volunteer driver systems in rural areas are another. Jitney services are also initiated and operated by individuals.

In short, paratransit represents a set of modes which typically serve well-defined travel needs. These services have been shown to be effective in meeting certain specific objectives, although the effectiveness of the service is largely a reflection of the service design and the organizational/operational framework. Whereas specific paratransit initiatives (e.g., particular ridesharing programs) often result in relatively small increments in paratransit usage, paratransit as a whole serves a fairly large and diverse market, and has proven to be a crucial element in the overall public transportation network.

As we move into a future marked by skyrocketing transit operating costs and dwindling public funds, the need for small-scale flexible public transportation options is becoming ever greater. The assessment of the future potential of paratransit carried out in this study has concluded that paratransit as a whole shows considerable promise - both for increasing its market share and for meeting specific goals and needs. It should not be viewed as a panacea for all transportation problems, but its role should not be overlooked.

One of the major roles for paratransit in general has been, and should continue to be, related to energy conservation. Although gasoline availability (and prices) has stabilized for the time being, the future situation is unclear. Any serious fuel shortage will likely have a dramatic impact on travel behavior, at least until such time that automobiles become much more fuel-efficient, or alternative energy sources become available.

Any public push for energy conservation will certainly increase the promotion of at least some forms of paratransit. Ridesharing modes in particular have been shown to be quite energy-efficient. Other modes can contribute to reductions in fuel consumption by improving the effectiveness of the overall public transportation network (i.e., through provision of feeder, as well as intra-community, service), although certain types of service (i.e.,



pure demand-responsive options) are, in some instances, relatively energy-inefficient, and may give way to less flexible hybrid and fixed route services.

It is those people living in lower density areas and newer cities (i.e., areas having limited transit service) who will be hardest hit by gasoline price hikes and/or shortages. It is in precisely these areas that paratransit options are generally more cost-effective than public transit. Thus, the market for paratransit should expand. If the recent settlement trends toward suburban areas and the "sunbelt" continue, demand and new opportunities should be even greater.

In the area of specialized markets, paratransit has been shown to be the most effective strategy for increasing the mobility of the TH. A growing elderly population (which implies a growing TH population) should further increase the market for paratransit service, although related trends (e.g., increased driving capabilities among the elderly) may somewhat constrain demand. In addition, growing concerns for mobility in rural areas are creating opportunities for expanded paratransit to serve a currently under-served market.

Perhaps most importantly, given current economic realities, paratransit can help reduce the overall public cost of transportation. Ridesharing, perhaps including privately-operated buspools, can reduce the need for longer distance peak hour transit service. Low cost flexible community-based services can replace fixed route service operated by regional transit authorities in lower density areas. Privately-operated neighborhood services (e.g., jitney and shared-ride taxi) can supplement transit routes in inner city areas. In all of these cases, public sector concerns over minimizing transportation costs to certain socioeconomic groups could conceivably be handled through targeted user-side subsidies. Paratransit options are certainly not replacements for all mass transit services, but they can effectively play supplementary roles and can fill most gaps created by any reductions in transit service.

Thus, there would seem to be potential for the expansion of paratransit in all of the major market areas. The next question which needs to be addressed is how this potential can be realized. As our travel needs and requirements change, we will need new types of services and new arrangements of those now in operation. There may very well be a place in future transportation systems

for "new" options such as shared-vehicle systems, licensed hitchhiking, and neighborhood transportation cooperatives. If guided properly, our future transportation systems will adequately serve all of our travel needs in an energy-efficient manner (i.e., with publicly acceptable alternatives to the single-occupant gasoline-powered auto). In the final section, we outline those conditions which appear to be most important in facilitating the future growth of paratransit concepts.

### ***Conclusions: Future Directions for Paratransit***

In order for the various paratransit options to expand and receive proper consideration, certain changes must occur within the overall transportation development and delivery framework. New (and underrepresented) actors must be encouraged to participate, and new understandings and attitudes must be promoted. This section presents a series of general conclusions regarding recommended future directions for improving the "public" transportation environment and increasing the role of paratransit.

1. The private transportation sector should be involved to a greater extent in the development and provision of service.

Private transportation providers have been shown to be capable of providing paratransit services at a cost often significantly below that of public operators. While traditionally only the taxicab industry has been actively involved in paratransit, private operators of various types, including private bus companies and individual entrepreneurs (e.g., jitney operators), have been increasingly involved in paratransit operations in recent years, and continuation of this trend should be encouraged. For instance, private operators should be encouraged to bid on all new public services planned for a region. Furthermore, existing local ordinances restricting private paratransit services (e.g., shared-ride taxi and jitney) should be eliminated or modified so as to allow introduction of such services - albeit in a manner which allows for the continued viability of existing operations. Such privately-initiated (and unsubsidized) services could become especially important in locations where transit service must be reduced due to budget cutbacks.

2. The role of the activity center should be encouraged.

Paratransit differs from conventional transit in that it is specific market-oriented, rather than mass market-oriented. The activity center that creates a specific market, understands its needs, and has some degree of control over its travel patterns, may be the best candidate to initiate paratransit service for that market. The success of employer-based ridesharing programs (as compared to areawide matching programs) is evidence of this.

Only a fraction of major employers have sponsored ridesharing programs, and few of these have attempted full-scale "commuter support" programs. Thus, there is still considerable potential for expanding this market. If employers begin to view commuting as an area of employee benefits, the impact on paratransit will be significant. Of course, there must be some reason for employers to want to participate in a service (i.e., some benefit to them). Reduced parking needs is one direct benefit. Other benefits may be perceived when rising costs make commuting a burden for many employers.

Activity centers other than employers may also be appropriate sponsors of paratransit service. A shopping center, particularly in a low density area, is one example. Of course, a business owner or developer must see some potential benefit if he is to consider introducing any type of transportation service. In inner-city areas, for instance, merchants' associations can benefit from improved circulation services, and entertainment complex operators (e.g., restaurants, cinemas) may benefit, particularly from improved evening services.

Of course, any significant increase in activity center involvement in paratransit will require increased awareness of the options available and the potential benefits. The public sector can play a role here through expanded demonstrations and information dissemination. In addition, activity centers must be encouraged to participate in the overall transportation planning process, to the point of becoming eligible recipients of capital or demonstration grants (i.e., if the services they plan are shown to be effective responses to particular transportation needs). Finally, localities faced with particular problems such as traffic congestion or high pollution levels should consider various forms of regulation aimed at encouraging activity centers to sponsor transportation services.



3. Service initiation should occur at the community level.

Activity centers are particularly important for organizing transportation operations to serve that particular activity. For more general service, however, another catalyst is needed. It is still important for the initiator to understand the needs of the market. For this reason, paratransit service initiation and development are best accomplished on the local (i.e., community or neighborhood) level. Service initiation could come from a municipality, a neighborhood association (or group of associations), or some form of cooperative.

Furthermore, paratransit should be coordinated with local social and economic development efforts. Policies with regard to development, parking, and other activities will influence the viability of public transit in general, and paratransit in particular. To some extent, paratransit can influence these activities as well. Thus, paratransit planning should be coordinated with local development planning efforts. To the extent possible, this should also entail promoting a greater awareness on the part of the business community of paratransit options.

4. The transit authority should become more open toward paratransit.

As public transportation costs have risen and the nature of demand has changed, many transit authorities have introduced paratransit services to help reduce deficits and to provide certain specialized types of service. However, some transit authorities continue to see paratransit - in the form of ridesharing or demand-responsive (or hybrid) transportation - as a threat. This viewpoint is clearly counterproductive in this era of rapidly escalating operating costs and dwindling public funds. Paratransit should be viewed as a complement (or supplement) to fixed route service: ridesharing works best for trips not well-served by conventional transit (i.e., relatively long trips); similarly, flexibly-routed services typically work best in lower density areas, and can potentially serve as feeders to line haul transit. Vanpools, jitneys and shared-ride auto arrangements can serve as fixed route supplements during peak periods; this would tend to minimize the peaking problem and help stabilize transit costs. Similarly, such services can be used in newly developing areas until demand justifies fixed route service, or to replace some routes eliminated due to reduced transit resources. Paratransit should be viewed as an opportunity to expand transit authorities' natural constituencies. Thus, where appropriate, all transit authorities should

promote - and perhaps provide overall coordination of - paratransit services within their regions. However, they must be willing to yield responsibility for direct operation of such services where appropriate.

Along these lines, there is sentiment in some circles for replacing regional transit authorities with networks of smaller agencies serving different parts of the region. Such moves would represent the beginning of a shift from a "monopolistic" era of public transit towards a deregulated environment allowing competition (even if complete deregulation is never reached). Such a shift could have a particularly positive impact on the growth of privately operated paratransit services.

5. There is a need for increased coordination among all providers of public transportation.

One of the manifestations of expanded provision of services initiated at the community level (i.e., by a variety of private operators) or by activity centers is an increased need for service coordination. Some degree of centralized control, or coordination, is required to ensure that: 1) there is minimal duplication of effort and unnecessary competition (i.e., the interests of existing providers, both public and private, are taken into account); 2) possible economies of scale are achieved; 3) local areas are made aware of funding and service options (i.e., proper information dissemination from the national level); and 4) professional support/technical assistance is extended to local planning efforts. These activities might be the responsibility of a central "broker," who would consider the service needs of each locality in a region. Such an arrangement could be used to effectively bring localities, activity centers, and private operators into the planning process. The transit authority may be a logical broker in some areas, in light of the broad service area it covers and the technical expertise it can offer; however, an effective broker must promote all modes, not just one particular type of service.

6. States should assume a greater role in the promotion of paratransit.

To date, state demonstration programs have been perhaps the most effective mechanisms for generating and supporting paratransit services. An expanded role by the states - i.e., setting up demonstration funding programs to get projects going - could be particularly effective. If the current federal plan to turn certain transportation and social service funding programs over to the states is adopted, the role of the states vis a vis paratransit (and indeed

all public transportation) will become crucial. Under such a plan, the states would be responsible for insuring that basic transportation needs (e.g., for the TH) continue to be met. Each state will need to address these needs in the most cost-effective manner possible, as available funding will likely be substantially reduced from current levels. Low cost flexible paratransit options can clearly play an important role in this scheme, and it is therefore important that the states understand the options and actively support and promote them.

7. There is a continuing need for demonstration of service and institutional concepts.

A crucial element in the development and expansion of paratransit over the years has been the demonstration of new concepts. As our public transportation environment changes, the need for demonstrations and effective dissemination of their results is becoming ever greater. In particular, there is a new set of approaches which appear promising in meeting present and future transportation needs. Among the concepts noted in this report which warrant demonstration are: 1) hybrid services, including route deviation and checkpoint many-to-many; 2) neighborhood transportation cooperatives; 3) activity center-sponsored services; 4) integrated car/vanpool and company motor pool arrangements; 5) use of postal buses (in rural areas); 6) shared-ride auto (with some prearrangement/brokerage); 7) neighborhood-based ridesharing matching; and 8) various "public use of the auto" concepts, including auto-sharing cooperatives and short-term auto rental arrangements.

8. The federal government should create an environment conducive to the development and introduction of paratransit services.

In addition to expanding demonstration activities, the federal government should create a policy and regulatory environment that encourages the implementation (or at least consideration) of paratransit options at the local level. One step in this process is to clarify the responsibility for paratransit development and funding. As of this writing, various offices within DOT, HHS, DOE, and EPA (to a limited extent) all have responsibility for paratransit programs; this has created confusion, as well as some duplication and inefficiency at the state and local level. In order to promote more efficient service provision, it would be useful for these agencies to better coordinate programs related to paratransit.

Another step - initiated through the recent issuance of the Paratransit Policy Statement - is to insure that paratransit services are considered



within the traditional transportation planning (i.e., Transportation Improvement Program/Transit Development Plan) process, and that private providers are considered to operate such services. Full consideration of private operators requires that local and state agencies review existing laws and regulations, and eliminate or revise obsolete requirements that constrain the introduction of paratransit service.

In conclusion, it is important that the federal government promote recognition of the fact that public transportation does not consist solely of a single type of service operated by a single operator, but rather involves a multitude of service types and operators. Such a recognition can serve as the basis for establishing a new environment for public transportation as a whole.

### ***Perspective***

Paratransit can no longer be described as "neglected options for urban mobility," as was the case when the Urban Institute issued its seminal study. Almost a decade has passed since then - a decade marked by considerable experimentation with, and controversy over, paratransit. The concept of paratransit is no longer in its infancy; neither, however, has it reached full maturity. The experience of the past decade has provided us with a better understanding of what can be expected from paratransit.

Paratransit represents neither a pancea for our transportation ills nor a set of modes with limited overall usefulness. Paratransit services have been shown to be capable of meeting various transportation needs well-served by neither mass transit or the private auto. Typically small in scale and flexible in structure, paratransit options can be targeted to particular market segments or they can be designed to provide community-wide service. Paratransit options can provide cost-effective service in areas lacking the densities necessary to support mass transit, and furthermore, they can be developed and operated within the private sector, and thus need not have extensive public sector financial support.

Given an appropriate regulatory environment, these characteristics, combined with the economic and demographic factors and trends described earlier, should result in an increased role for paratransit over the coming decade. Perhaps the next assessment of paratransit will reveal that the

concept will have finally achieved its full potential. Hopefully, Paratransit: Options for the Future has shed some light on the nature of this potential.

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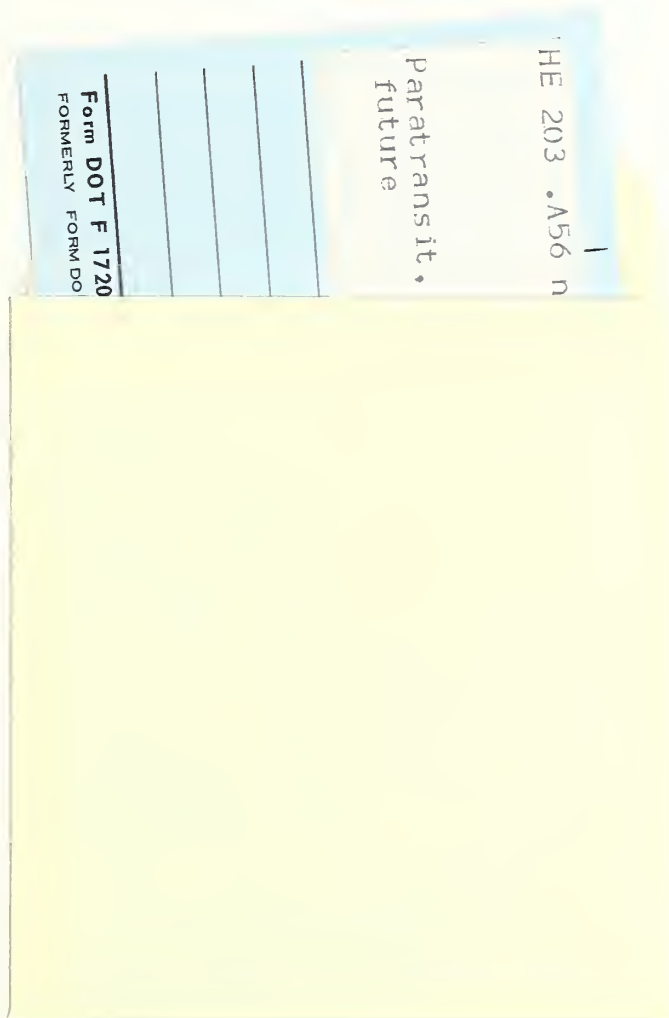


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