

**Table 2. Estimated monthly cost for daily round trips.**

Choice of Travel	Cost per Month (\$)						
	10 Miles	20 Miles	30 Miles	40 Miles	50 Miles	60 Miles	70 Miles
Drive alone	45	90	135	180	225	270	315
Carpool of two persons	23	45	68	90	113	135	158
Carpool of four persons	11	23	34	45	56	68	79
Vanpool	37	41	44	48	52	55	59

Note: Table adapted from Federal Highway Administration statistics.

Even greater economies can be achieved if administration and financial support for these paraprivate options can be shifted in part (or in the case of large employers, totally) to the employment centers themselves. The nation's largest employer, the federal government, has already moved in this direction through Executive Order, Circular No. All8, which deals with federal employee parking facilities. In addition to mandating the collection of appropriate charges for federal employee parking, it also mandates the establishment of an employee transportation coordinator at every federal facility that employs more than 100 persons. In accordance with President Carter's memorandum of February 1, 1980, these employee transportation coordinators are to give priority parking to carpools and vanpools, to establish favorable van financing terms, to facilitate ridesharing matches, and to disseminate mass transit information. Many private firms have developed such programs as employee fringe benefits. Much more, however, is still needed. Nearly 65 percent of all workers drive alone to work. Many more could share the ride or become a member of a paraprivate transportation mode. Ironically, there would be an abundance of passenger seats, parking spaces, and roadway capacity if all vehicles, space, and highway networks were used efficiently. It is time to manage facilities far more productively than previously has been expected. Instead of planning and building for vehicles per hour per lane, concentration should be on persons per vehicle per hour per lane.

#### SUMMARY

The management of public transportation systems in the 1980s will be a challenge for transit and transportation officials. The concept of public transportation will expand to include paraprivate modes, just as it expanded to include paratransit modes in the 1970s. The broadening to include paraprivate modes, however, will bring a more fundamental change

in the management strategy. Management will be forced to abandon the concept that only publicly owned and operated services comprise the public transportation system. In fact, management will be encouraged to do so by governmental authorities that are burdened by local tax pressures. Unlike traditional transit costs, costs of paraprivate options will be shared with employers as they are encouraged to set up and administer their own employee transportation programs. Such a change presents interesting challenges to state and local regulatory bodies. Resistance to these changes is natural; but in the end the rationale of these modes and their preference will prevail.

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## Coordinating Transportation: The Logistics Solution

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One of the primary problems of the poor, handicapped, and elderly, especially if they live in rural and suburban areas, is transportation. More than 116 federal programs have been developed in an attempt to correct this transportation deficiency. However, due to the large number of programs, there have been charges of duplication of services. This has brought about calls for consolidation, even though consolidation is the least-efficient and least-effective form of coordination. The purpose of this paper is to emphasize that coordination of transportation service is totally different from the coordination of plans to build fixed facilities, organization to coordinate funding from many categori-

cal grant programs, or organization to coordinate a well-defined production activity such as transportation. A second purpose is to emphasize that the large organizations that have been concerned with both the effectiveness of transportation as well as the efficiency of transportation are using the logistics approach to coordination whether they be government (military) or private (business). The third purpose of this paper is to emphasize some of the inherent weaknesses of consolidated transportation programs and to suggest some alternative approaches to coordination.

Transportation increasingly concerns the elderly, handicapped, young, and poor, and both the cost of transportation and the pressure to reduce government expenditures are increasing rapidly. The financial rejuvenation of traditional transit systems has allowed traditional transit systems to do an excellent job of linking the suburbs and the central business district (CBD) (1). Unfortunately, transit seldom serves the non-CBD-oriented trips or trips for individuals who cannot get to bus stops or who need escort service. Many social-service agencies must provide transportation if social-service beneficiaries are to have access to essential social services. Social-service transportation, usually funded by categorical programs, has created a large number of vehicles operated by many different agencies, including schools, senior-citizen nutrition programs, sheltered workshops, public housing agencies, private nonprofit groups, churches, and volunteer groups. The increasing cost of providing this specialized transportation has now brought legislation that mandates the coordination of publicly funded transportation. Those who propose the legislation usually identify the existing programs as fragmented and overlapping and charge that they provide duplicate, and thus costly, service. The intent of this legislation is very simple: Improve the management of the transportation provided so it is less costly and ensure that public funds are not used simply to replace private, nonprofit transportation or the extended helping networks of family, friends, and neighbors.

Unfortunately, it is easier to understand legislative intent than it is to statutorially define an organizational structure to carry it out. Therefore, the legislature generally assigns an organization such as the department of transportation or the department of human services to be responsible for coordinating all government-funded transportation.

Although the need to coordinate is not new, the tendency has been to use traditional coordination procedures without considering whether the techniques apply.

There are many different approaches to coordinate activities, but four categories will effectively illustrate the general range of approaches:

1. The fixed-facility coordination model--Engineers and planners develop detailed plans for building large facilities (e.g., subways, airports, and roads) that affect large groups of people, cross political jurisdictions, and defy dismantling once constructed. The resultant elaborate and continuing planning processes require review and approval of any action from each affected political entity. This model makes a simple bus route change or the location of an Interstate highway equally complicated.

2. The funding coordination model--Human service agencies have typically sought funding from many sources in order to implement a program. (There are more than 116 different federal programs that fund transportation alone.) Frequently, an umbrella agency, eligible for funding from multiple sources, aggregates funds to obtain enough to actually operate a program. This model organizes transportation coordination to obtain funds rather than to improve management.

3. The operations coordination model--This model requires well-defined demand and a single transportation provider. The operations manager can select the ideal vehicle and the ideal facility and select and train drivers to transport the predefined demand. Coordination for constant demand simplifies operations. This model reflects the age-old conflict between the production sector that wants con-

tinuous, stable operations and the users who want a variety of products to meet their individual needs.

4. The logistics-coordination model--Large organizations for which transportation is a means, not an end, developed the fourth coordination model. During World War II the military realized that what was important was whether transportation actually accomplished the mission--for example, moving troops to France, fuel to the tanks in North Africa, or the wounded to appropriate medical care--not who provided the transportation.

In the first three models, one centralized organization coordinates the political review process, receives public funds, and provides all services. The emphasis is on the organization that provides the service (the means), rather than on the resource-effective provision of transportation (the results). In the fourth model, business, confronted with the profit squeeze of the early 1960s, used transportation coordination to reduce cost while actually improving the level of service [see, for example, Taff, Heskett and others, Mossman and Morton, and Bowersox and others (2-5)]. The logistics model developed by these groups recognized three important concepts:

1. Transportation users have a wide variety of service needs,
2. The service that is provided must be tailored to meet the user's need if it is to be effective, and
3. The end results required, not the transportation service currently being used, should dictate the type of service.

Unlike transportation operators, who view their role as providing transportation, logistics managers view themselves as giving time and place utility to a person or product. Unless the person (or product) is in the right place at the right time, the logistics manager has not been effective. If the resultant cost is too high, the logistics manager has not been efficient. Business and the military rely on the logistician to accomplish the job, in the most cost-efficient manner, according to the service levels set by the organization. To accomplish the organization's mission, the logistician must select from the common-carrier modes (e.g., motor carrier, rail carrier, water carrier, or air carrier) contract carriers, self-operated private carriers, mail or parcel services and the associated functional areas of warehousing, inventory management, packaging, and information systems to form the combination of alternatives that will yield the optimal mix of service and cost.

#### METHODS FOR INCREASING TRANSPORTATION EFFICIENCY

There are five management methods for increasing transportation efficiency:

1. Increase vehicle load factors--Fill empty seats on vehicles that are already in operation to increase efficiency. Thus, airlines offer low-cost standby tickets and the Federal Highway Administration promotes commuter ridesharing.

2. Increase time use of transportation resources--The use of existing, underemployed resources is an excellent source of low-cost transportation. Tour buses are excellent providers of commuter service and school bus operators are a potential source of midday, evening, weekend, and summer service.

3. Reduce deadheading--Deadhead (or nonproductive mileage) serves no function other than to stage vehicles. Deadheading characterizes the centralized

transportation provider who stores the vehicle at a centralized facility only to drive empty to the first pickup point and from the last discharge point. When a rural community has to pay empty mileage on an intercity charter bus from its staging area in a large city 100 miles away or a rural human service agency incurs the cost of driving an empty van out to a person's home to bring them back to an agency activity, deadheading is very costly.

4. Realize economies of scale--The concept of economies of scale is well-recognized by government, which has an almost implicit faith that bigger is better. This is the fundamental assumption that translates the legislative mandate to coordinate into the consolidation of all transportation under one provider organization to eliminate duplication. Ironically, numerous studies show that few, if any, economies of scale exist in actual vehicle operation. There are, however, economies in terminal operations, risk-management programs, marketing, dispatching, insurance, and other support services. The existence of line-haul economies of scale is questionable in most modes, including trucking, intercity buses, airlines, and maritime transportation.

5. Increase the ability to respond to changing user needs--Organizations frequently must balance the interests of their clients and the short-run interests of their employees, managers, and suppliers. In businesses, the marketing department usually sets customer service levels. (Marketing realizes that a decline in service levels leads to lost sales.) In the military, the strategic unit determines the service level required of the logistics organization. Unfortunately, specialized transportation has neither the market pressures of private industry nor the well-defined mission of the military to counteract the pressures of the operational interest. The tendency is to protect the organization from user-requested change.

COORDINATION VERSUS CONSOLIDATION

The fixed-facility, funding, and operational models of coordination focus on the organization rather than on management strategies for making transportation more effective and efficient. This facilitates the political review process, melds with the umbrella-agency funding concept, and makes one group responsible for providing all transportation. This preoccupation with defining the organization that should operate special-services transportation distracts attention from the two basic questions:

1. Is the organization providing the service that the social-service agencies and their program beneficiaries actually need? and
2. Is the organization using the resources efficiently?

To differentiate between the consolidated approach to transportation and the logistics approach to coordination, consider how each group addresses the first three principles of transportation management.

The consolidated transportation organization practices selective provision of transportation to contain cost, but the logistic organization practices selective procurement of transportation to control cost. In the first case, the way the service is provided is paramount. In the logistics approach, meeting the needs of the user is paramount. The table below shows how these orientations differ.

<u>Management Objective</u>	<u>Consolidated Provider</u>	<u>Logistics Coordination</u>
Increase load factor	Only accept trips where	Look for existing providers who

<u>Management Objective</u>	<u>Consolidated Provider</u>	<u>Logistics Coordination</u>
	surplus capacity exists; ignore new service requests until existing vehicles are full	are already making the trip but have excess capacity
Increase vehicle use	Aggressively look for trips that can be transported during agency's low-demand period or reduce peak-period demand (peak shaving)	Look for existing or potential providers who have underused capacity when trips need to be supplied
Decrease deadheading	Discourage or eliminate trips that require extensive dead-heading	Look for existing or potential providers who have vehicles and drivers already staged near the trip origin

The consolidated provider controls costs by limiting the types of transportation it will provide. It may provide transportation on rigid schedules, to terminals or pickup areas only, or to restricted categorical groups or geographical areas and may exclude escort or support services. The freight industry has used a selective marketing approach that only solicits freight that will improve the directional balance of their freight.

When coordination is interpreted to mean consolidation, it, in effect, gives the designated provider a mandate to operate all transportation regardless of its effectiveness or potential efficiency. If the service is inadequate, the funding agency is expected to increase funding on the assumption that the service is provided efficiently because there is only one provider. If the service is too costly, then the provider must reduce the level of service because alternative methods of obtaining service are outside of the consolidation frame of mind.

However, when transportation coordination focuses on managerial coordination of all available and potential resources by using the logistics approach, as in the military and business, then the emphasis is on the following:

1. Defining the range of services needed by various user groups,
2. Finding (or cultivating) providers of the required service, and
3. Developing a feedback system that measures the effectiveness and efficiency of the service.

Two additional concepts will also become part of the logistics management approach:

1. The systems concept views transportation as simply one component of the total trip, including scheduling of service (information), specialized support, and terminals (waiting areas for passengers). (A consolidated operator of transportation, on the other hand, emphasizes the transportation system independently of the user.)
2. Transportation is integrated into planning the primary product or service at the earliest possible moment. The provision of time and place utility is as important as the design and funding of the

program itself and should be considered as part of the delivery of the service. In the case of special services, the transportation component should be part of the initial legislation, organizational structure, intake process, and budgeting procedure.

The purpose of this paper is to emphasize that the coordination of transportation services differs among organizations in the coordination of planning for fixed facilities, coordination of funds from diverse categorical grant programs, or coordination of a well-defined production activity. A second purpose is to emphasize that the organizations that have been concerned with the effectiveness of transportation, as well as the efficiency of transportation, have adopted the logistics approach, whether they be government (military) or private (business). The third purpose of this paper is to emphasize some of the inherent weaknesses in the consolidation of transportation programs and to suggest some alternative approaches. The remainder of the paper will address the third purpose.

#### INHERENT WEAKNESS OF CONSOLIDATING TRANSPORTATION OPERATIONS

Some major institutional issues affect consolidated transportation programs.

#### Operation for Benefit of Employees Rather than for Users

Under the law, there are two basic contractual forms--the buyer-seller contract, in which one party purchases something from another party, and the employer-employee contract. In law, the buyer-seller contract is clearly an arm's length relationship. If a seller does not meet fully all the terms of the contract, the purchaser (especially where the purchaser is a public employee acting on behalf of government) has a strong obligation to take corrective action.

The employer-employee contract, on the other hand, is considered to be a protective relationship. If a manager does not operate a department in a manner that will keep the employees happy, the manager will come under severe criticism. Where there is a single provider and where competition is prohibited, the service will quickly come to be operated primarily for the benefit of the employees rather than for the benefit of the user, unless there is a buyer-seller contract between the provider of the service and the customers who use or pay for the service. Thus, a consolidated transportation service will often adhere to employee preferences and pressures rather than to consumer preferences on hours of operation, amount of passenger assistance provided, and other key service variables.

#### Lack of Accountability

There are basically two ways to make a monopoly accountable to its constituency--through the establishment of an oversight organization, such as a regulatory body, or through the control of funds. One often-mentioned problem with oversight bodies is that, with time, they tend to identify with the needs of the groups they regulate rather than with the consumers (6). One reliable system for keeping a service accountable to the needs of its customers is to give the customers (or their agents) control of the flow of funds to the provider. Allocation of government funds directly to the provider, rather than to the clients or agencies, eliminates the incentive for the provider to adapt to the evolving needs of the agencies or their clients.

#### Lack of Incentive to Innovate

A major charge made against monopolies is that they lose the incentive to innovate except in very well-defined areas (7). (Where rate of return is regulated, there may be an incentive to innovate in capital-intensive areas.) For example, not until the U.S. Supreme Court held that the telephone company must allow competitors to connect equipment to the public utility's lines did the customer get plug-in telephones, computerized telephone dialing, and multifunctional telephone sets. The designation of a single provider of transportation service for all government retards the development of innovative solutions.

#### Potential Conflicts of Interest Within Regional Transit Authorities

Although regional transit authorities (RTAs) can overcome many of the jurisdictional problems that plague transportation, they may create even greater problems. Where RTAs oversee the operation of a specific transportation system but do not have responsibility for raising the money to operate the system, RTA members frequently find themselves in a very difficult position. First, they may not perceive any way to control the cost of operation. Therefore, lobbying city or state legislative bodies for funds becomes the only way RTA members can work personally to improve service to the community. Thus, RTAs become publicly supported lobbying organizations that provide service in limited ways but remain the authorities on public transportation matters. Because other transportation options are illegal, legislatures must continually increase funding or be viewed as insensitive to the needs of the elderly, the handicapped, the poor, or the emotionally disturbed. It becomes pure pressure politics.

Organization of RTAs to be fully self-supporting through fares, RTA-imposed taxes, or some other revenue sources that are subject to continual public review, may build more discipline into the cost of providing service, but monopolistic restrictions on innovation are still very real.

Many RTAs, especially those in small communities, contract with a company to manage the public transportation system. Since there is a strong desire to put all possible funds into the provision of service, the RTA board often requires that the resident manager also be the executive director of the authority. This appointment may be official, as in Chattanooga, Tennessee, or de facto, as in Knoxville, Tennessee. Thus, the contract management firm is forced to be the city's spokesperson on transportation matters. The authority may then expect the resident manager to develop policies for them to approve. This places the contractor in the position of regulating competitors (e.g., taxis, limousines, and social-service providers), recommending budgets, and proposing needed changes in operation, contracts, laws, and ordinances. This is much like having a building contractor speak for the city on all zoning matters and also enforce the building code. This is not a criticism of contract management firms but rather a criticism of RTA boards that do not maintain an arms-length relationship with the contractors and that abdicate their policymaking responsibilities by not having their own policymaking staff to administer the contract (8).

#### Tendency of Capital Grant and Bond Programs to Build Organizations Rather than to Provide Service

Government bodies tend to be capital oriented. Leg-

islative bodies appropriate funds for highways, hospitals, airports, or schools. Constituents can see the return for their money cast in concrete and steel. However, legislative bodies fund organizations reluctantly because payroll is an increasing annual expense that does not have visibility.

To provide transportation service, the government grants capital for vehicle purchases, but then it must fund an organization to take title to the vehicle, to operate it, and to insure it. Operating costs over the life of the vehicle usually exceed capital costs. Thus, the capital grant creates an organization that must be continued with new operating funding. To maintain flexibility, government should not give capital grants but fund the purchases of transportation as needed.

One RTA sought a capital project to justify a bond issue. This RTA thought that the responsibility for the bond issue would guarantee its continued existence.

#### Tendency to Fund Agencies Rather than Services

Efforts to establish a single, consolidated transportation service often result in the community funding of an agency rather than a necessary service. Budget requests were based on the dollars required to maintain or expand the organization, not on the number of trips required. Thus, a single agency not only restricts options but has a tendency to obtain funding to perpetuate itself.

#### Tendency of Public Accounting Procedures to Distort the Cost of Providing Service with Public Funds

Because public accounting procedures are designed with two major goals, the public accounting system differentiates between operating funds and capital funds. First, the system of accounts is established by program to ensure that the funds are spent in accordance with laws or authorized budgets. Second, the accounting system is designed to ensure that the governmental unit does not overspend the funds authorized in any one period. Thus, the accounting system does not show the trade-offs between capital and operating cost, allocation of depreciation among various agencies, or the time value of money. Therefore, the governmental accounting system is designed neither to price services nor to determine whether the appropriate levels of service are obtained economically. Government relies on the various contracting procedures to ensure a fair price for the services; but in transportation, the process is circumvented when there is only one provider (9).

#### Consolidated Transportation Funding Programs Bypass Local Public Officials

Local consolidated transportation providers may deal directly with the state or federal funding agencies and structure proposals and plans without involving local public officials in the planning, operation, or evaluation of the service. If 75-90 percent federal money is available, local public officials may approve the organization and application simply because their community "might as well get the funds". With little local money required, public officials often have little involvement in the review, evaluation, and oversight of the project. The placing of a local official or citizen on a board or authority to oversee the consolidated operation is only effective if that person becomes heavily involved.

#### Consolidated Transportation Programs Replace Private Efforts

The inability of traditional transportation providers to meet all transportation needs fully has given rise to church and charitable transportation programs such as those provided by the Easter Seals Society, United Cerebral Palsy, and the Young Men's Christian Association. In addition, informal neighborhood arrangements have developed. The funding of consolidated transportation operations by government curtails private initiatives. For example, charitable organizations will not operate transportation services at \$2.00-\$5.00/trip when they can give their members (or beneficiaries) \$0.50 tickets to ride the publicly funded system and force the public to absorb the deficit. Thus, charities still receive credit for giving riders the tickets and avoid all of the operating headaches. Government may intend to supply funds to augment service to those who have special needs but quickly finds that it has doubled the cost of the services, replaced private funds with public funds, and has become the primary provider of transportation rather than the provider of last resort, which it desired to be.

#### Alternative Model Based on Logistics Coordination

The logistics model suggests that the locality establish a logistics manager, a transportation coordinator-broker who uses the basic principles of logistics management. Businesses may centralize or decentralize the logistics function as appropriate, depending on potential service or cost benefits.

#### ORGANIZING FOR LOGISTICS COORDINATION

During the last three or four years, there has been extensive experimentation with brokerage organizations that attempt to bring buyers and sellers of transportation together. These programs have done much to eliminate the idea that consolidation is the only solution. There is a need, however, to develop a full set of principles for coordinating public transportation programs. There is a need to identify contracting procedures, approaches to cultivating new providers, procedures for assigning management responsibility and system accountability to each actor in the transportation channel, and new carrier-evaluation procedures. As a means of providing insight into some innovative approaches, an overview of successful coordination projects is presented below.

#### Camden County, New Jersey

The welfare board of Camden County had a \$2500/month budget to provide transportation to its clients (95 percent of whom are eligible by Titles 19 and 20 of the Social Security Act of 1935, as amended). Instead of buying vehicles, hiring staff, and setting up an in-house maintenance facility (staff alone would have exhausted the budget), the board indicated that it would pay on-call volunteers to transport clients. According to information from Joe Calanero of the Camden County Welfare Board, the board currently has 20 regular volunteer drivers plus a long list of applicants. The 20 regular on-call volunteer drivers must meet rigorous standards and often have better qualifications than full-time drivers in other programs. One driver, for example, is an X-ray technician who did not like working at the hospital because she wanted evenings and weekends home with her husband and children. The on-call volunteers usually provide escort service,

which includes helping patients from their homes, staying with them while they are receiving medical treatments, and picking up prescriptions. Backup volunteers provide service when the regular volunteer cannot. On-call service is available 24 h/day, seven days a week, at \$0.20-\$0.25/mile (\$0.125-\$0.155/km), approximately 50 percent of the cost of taxicab fare. Administrative cost is virtually nil. (The county has complete flexibility in the use of funds and does not incur vehicle or organizational operating costs.) All maintenance, vehicles, fuel, and supplies are provided by the volunteers.

#### States of Montana and South Dakota

Unlike Camden, New Jersey, Montana and South Dakota have many rural counties that have low population densities. In many of these counties, the county officials will hire farmers, housewives, off-duty police, firefighters, or others to provide on-call, part-time transportation in their own vehicles. The county usually pays the minimum wage plus \$0.20/mile (\$0.124/km) to the provider. These part-time providers are especially important in Montana because of the number of small, scattered communities and the long distances involved in the typical trip. Traditional rural transit systems would not be possible due to extremely high costs.

According to information supplied by Barbara Garrett of the Montana Department of Community Affairs and Planning and Don Daughtee of the South Dakota Association of Senior Citizens, some counties have quasi volunteers located in two or more of the county's communities (see Figure 1). If an agency operated its own vehicle, it would probably be garaged in the local town. If client A and client Z need transportation to the doctor's office in town, the agency would have to run empty (deadhead) from the town to A's home, take A to town, drive empty to Z's home, and then take Z to town. By having quasi volunteer 1 pick up A and quasi volunteer 2 pick up Z, only one-half as many miles are traveled.

If A, B, C, and D need to go to a congregate meal site in town, volunteer 1 can bring them in and help with serving the meal while waiting for the return trip. At the same time, volunteer 2 can pick up W, X, Y, and Z and bring them to the meal site. The agency would have to operate two vehicles, which would have two drivers, over twice the mileage to provide the same service, because by the time one vehicle could deliver A, B, C, and D to the meal site, the meal would be over by the time it returned with W, X, Y, and Z.

By simply locating on-call quasi volunteers who will provide transportation for a fee in each rural neighborhood, the county can establish a highly efficient, personal, high-capacity, responsive system without the high administrative cost and institutional problems of the consolidated operations. This plan also provides supplemental income to many underemployed individuals. In addition, such a neighborhood program is not impersonal.

#### Knox County School Board

The Knox County, Tennessee, School Board owns no vehicles (only two special education vans); instead it uses private contractors. No contractor can have more than four contracts (each vehicle is a separate contract), and the contractors must drive one of them personally if he or she provides more than two vehicles. The purchase of a new vehicle will result in new four-year contracts, and that contract serves as security for 100 percent funding from any local bank. Drivers are paid \$13.25/seat per month plus \$0.48/mile for a 66-passenger bus. The supervisor

of transportation locates all routes, assigns each route to a specific contractor, conducts safety inspections, organizes training programs, and answers all questions and complaints from parents. According to Bill Orr of the Knox County School System, the total overhead cost to the county is \$53 000/year (for three people) for the supervisor of transportation's office. In 1979, 110 contractors provided 221 buses (12 804 seats) for 1350 daily runs that carried 26 000 students (52 000 trips)/day. Cost per pupil is the lowest in the state. The equipment is mostly new; many contractors used Bluebird buses equipped with radial tires, chrome hubcaps, two-way radios, and deluxe seats. The school board requires that the buses be available 175 days/year, Monday through Friday, from 7:00 a.m. to 8:30 a.m. and from 2:15 p.m. to 4:30 p.m. The buses are free at all other times for making additional trips. As a result, many contractors are willing to provide transportation to schools, churches, scouts, 4-H clubs, and other groups that desire service during nonschool hours between 8:30 a.m. and 2:15 p.m. The drivers are willing to transport senior citizens any time they feel that they can avoid being in conflict with the Public Service Commission, the Interstate Commerce Commission, or the Knoxville Transit Authority. Where groups want specialized equipment, school bus operators are more than willing to purchase vans or other equipment. Because the contractors are already in business, they perceive very little risk in expansion.

#### Fulton County, Georgia

In Fulton County, Georgia, local clubs decided to attack the problem of the isolation of senior citizens. Fulton County is part of the Metropolitan Atlanta Regional Transportation Authority (MARTA) system. Many senior citizens wanted to make local trips to neighborhood shopping centers. Local shopping centers established a special senior-citizen shopping day each week. MARTA agreed to provide special senior-citizen bus runs specified by the county coordinator if the county guaranteed a minimum of 12 passengers. Local churches donated their buses and volunteer drivers to transport senior citizens. Senior citizens contributed to offset the cost of operating the church bus service. Civic clubs (such as the Civitan Club) contributed for any senior citizen who was unable to do so.

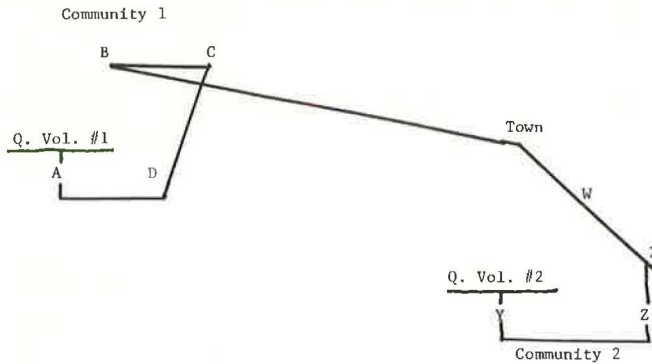
The promoter of this program thinks that this type of activity helps to rekindle a spirit of personal involvement in solving local problems within church and benevolent organizations. This is necessary for the growth of these organizations. One individual said that he personally thought that "one of the problems with contemporary society was that government was trying to professionalize all community service activities so that individuals, religious organizations, and benevolent societies no longer had a chance to meet the needs."

According to Edward Hogan, the county administrator's office is pleased with the service and wants to hire coordinators to work with other civic clubs, churches, and communities to establish similar programs in the rest of the county. He thinks that this vital neighborhood service augments and feeds to the MARTA subway system, now under construction, and supplements feeder service to collection points along traditional transit routes.

#### Hypothetical Model for a Rural Community

These four case studies describe innovations that work. Based on these concepts, a hypothetical plan

Figure 1. Location of on-call quasi-volunteers and clients.



could be developed for establishing a program for a rural community that we will call Smallsville. Smallsville is located on the old highway between two major cities. Although these two cities are only 180 miles (290 km) apart, the mountain terrain and crooked highways created a 7-h trip over the old highway. The new Interstate highway, which bypasses Smallsville by 35 miles (56 km), has reduced travel time to 3 h 15 min. If intercity buses travel the new Interstate, they are highly competitive with airline travel and can attract passengers. Smallsville, however, is concerned that if the intercity buses stop serving the community, the community will be further isolated. Therefore, the community brought strong political and citizen pressures on the state Public Service Commission to force Greyhound and Trailways to continue to use the old route. Consequently, the intercity bus service is not competitive; ridership is declining; Smallsville has an unwilling, captive provider; and fuel is wasted due to the circuitous miles operated on each trip. Furthermore, if residents of Smallsville want charter bus service, they have to pay deadhead (empty) mileage from the terminal in the major city in addition to standard charter rates.

The traditional approach is to lobby for subsidies for the intercity bus carriers and to lobby for funds to start a rural transportation system. However, if Smallsville would apply the basic logistics principles, it could find many new options available that may not even require public funds.

For example, the county school board owns and operates 80 school buses. The county school board could implement a Knox County-type of school bus program by selling three to four buses to each of several private contractors. Purchase of the buses would give the contractor an initial two-year contract. The sale of 12-25 buses would generate \$100 000-\$200 000 new dollars for the school board and it would put four to six small bus businesses into operation.

The city then could approach the intercity bus industry and offer to withdraw all opposition to abandonment of service to Smallsville if the intercity bus companies would do the following:

1. Establish a bus stop (commission agent) at a service station or motel on the Interstate highway exit nearest to Smallsville,
2. Enter into an agreement with one or more of the new school bus companies to operate package express and passenger pickup in Smallsville and surrounding communities and to interline with Greyhound and Trailways at the new Interstate highway stop,
3. Support requests by the new school bus companies for permission to operate charter bus service to and from the Smallsville area, and
4. Allow social-service agencies to negotiate

contracts with the new bus companies to provide for transportation of senior citizens, handicapped persons, and any other rural group, as needed.

In essence, this approach would generate a new local industry that has four or more competitors that could provide school bus service, charter service, fixed-route service, package express service, specialized service, and any other options desired. Local companies better understand local needs. The school board contract would provide a basic guarantee of business, so it would be relatively risk free for the entrepreneur to obtain specialized vehicles or to expand. But most important, public monies would be used to purchase service, not to build organizations. Government and social-service agencies would maintain control over the service that was provided. In addition, the existence of competition would ensure a high quality of service.

#### SUMMARY

The desire for transportation coordination is simply a desire for more efficient and effective transportation. It is basically a resource-management problem. Legislators and public administrators find themselves in the same position as the military during World War II. The military leaders had no desire to be burdened with the details of supply and transportation, but wanted only to work out strategies to accomplish their mission. Unfortunately, they found that the limitations of these support services set the limits on their strategic options. The reorganization of the military logistics activity recognized these restrictions. Today social-service agencies are in the identical dilemma, with little desire to be involved in transportation but faced with severe restrictions on their ability to accomplish their mission because of transportation problems. If the consolidation model--the very heart of the public utility approach to transportation--had worked for traditional transit, social-service agencies would not be in this dilemma. The resolution of the dilemma lies in the lesson that history taught business and the military: The gist of that lesson is the logistics-coordination model. We should heed that lesson well.

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