Transport Lessons From Europe

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Europeans protest politely at the suggestion that Americans might learn from them about solving problems of urban transport. First impressions suggest that the reaction may be justified. For with 60 million motor vehicles, traffic jams in Europe are reminiscent of the United States in the 1920's, before much had been done to cope with them. Space is now so tight in some big cities that triple parking on the streets is being augmented by double parking on the sidewalks.

Despite their traffic, Europeans have cities that Americans like to visit, and if we ask ourselves why, the answer is obviously not because Europe has discovered a nostrum for urban mobility. The United States knows considerably more about how to move in cities. But Europe has demonstrated that it knows most about how to live in them. One reason is that European cities have insisted on using the transport system to help ensure a pleasing environment. The result of this policy is that although there are traffic troubles in the short run, the approaches to their solution may achieve a smashing success in the long run. Countries like France, Italy, and Sweden are not being tempted to win the battle against congestion at the cost of losing the cities themselves.

MAJOR TRAFFIC ARTERIES

European cities cannot boast many high-capacity urban expressways, but they do have a large number of broad boulevards that carry substantial volumes of traffic and at the same time add immeasurably to the charm and function of the metropolis. The wide center strips of European boulevards do double duty. They not only separate traffic but they accommodate pedestrian malls, parks, subway entrances, and commercial areas for outdoor refreshments, bookstalls, periodical stands, and flower shops. Gardens and rows of trees along these boulevards contribute to the quality of the neighborhood. Cars take advantage of the shaded reservations for parking. The same dual uses are repeated on a smaller scale along the green areas that separate the main road from the service roads.

The boulevards of Paris, Milan, Copenhagen, Turin, Lisbon, Madrid, and Barcelona give these cities character and beauty, and help supply them with park and recreation areas. Widths are frequently a hundred yards. What they add to the city is far more than a surface to ride on. Many miles of these main streets perform non-transport functions that are an integral part of the life of the city.

Federal highway legislation in the United States is just beginning to make this possible in urban areas. What is needed is joint planning and financing of roadways and related community facilities to ensure that rights-of-way serve both transport and non-transport objectives, and that a combination of programs creates a package approach to meet multiple purposes.

The assumption that a limited access road is always the best answer for main roads in cities is made highly questionable by European example. A larger mileage of boulevards incorporating some of the design features of the expressway may be preferable. Lack of complete access control can be partly compensated by service roadways on either side, and by the construction of underpasses at selected intersecting streets.

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This kind of boulevard will move fewer vehicles per hour, but it will create a lively, interesting, and aesthetically attractive environment that attracts both residential and commercial users and supplies the walkways, play space, and recreation areas that could be desirable side effects of the urban transport system.

The redevelopment of American cities affords an opportunity to create this kind of major arterial in the course of the demolition required for new housing and community facilities. An existing street can be combined with the next parallel street through acquisition of the entire intervening block of buildings.

Europeans have placed particular emphasis on esplanades built along the waterfronts of rivers and lakes within the cities. Rather than permitting these natural (and sometimes artificial) features to be monopolized by industrial uses and the least attractive growth, Europe has turned them to magnificent advantage. Good examples of waterfront developments include the lake highways of many Swiss cities, including Geneva, Zurich, and Lucerne. Zurich has created an excellent combination of park lands, restaurants, and transport routes along the water. Among the big industrial cities of Germany, the waterfront transport and park system in Hamburg is especially impressive.

In Naples the frontage on the Bay of Naples is used for a major dual highway, with special reservations for transit, a median strip for parks, playgrounds, and gardens an eighth of a mile wide. Other examples of effective joint transport and nontransport projects are found along the Seine in Paris, the Thames in London, the Rhine in Heidelberg and Frankfurt, and the oceanfronts in Copenhagen and Stockholm. Many cities turn their backs on the water or destroy waterfront sites with elevated structures. Boston, Providence, Baltimore, Philadelphia, and Georgetown’s Potomac River front are examples.

Rewarding uses of waterfront properties stem from acceptance of the idea that joint uses and combined resources are essential to an effective waterfront design. Preoccupation with one project at a time and the search for least-cost solutions that are inherent in such an approach have led to squandering the advantages for urban development that are inherent in waterfront land. A combining of recreation and housing programs with transport undertakings can remedy this mistake and demonstrate, in the broader context of multiple uses, that the objective of economy is better served by pooling resources than by cutting corners.

ORDINARY STREETS

Many ordinary streets today are a depressing gridiron of asphalt, and streetsides are a jumble of poles, wires, signs, and weeds. This mileage of barren pavement requires an imaginative face-lifting program to create an acceptable environment for the new housing, community facilities, shopping centers, and recreation areas that urban redevelopment will entail. Because at least a fourth of the area of American central cities is in streets, any program to improve the environment starts with the streets.

Europe has made many lesser streets attractive by the creation of streetside parks and playgrounds, attractive designs for street lighting standards, tree planting and landscaping, and the selective acquisition of land at intervals to provide an entrance from the street into rear property for off-street parking. The removal of utility poles and wires has been of basic importance. When these measures are taken to improve the public way, there is a tendency for private properties also to be improved. Aesthetically desirable standards for advertising signs are also essential.

In rural areas, highway departments provide roadside parks and landscaping, remove poles, control signs, and regulate commercial developments. These responsibilities do not extend to the urban links of state highways, and no agency is concerned with similar matters on local streets. Urban highway programs should provide for these ancillary features, and highway funds should be made available as in rural areas.

Private enterprise has a major stake in the viability of cities and could be the most important factor in turning the tide against streetside blight. The same companies that build unsightly service stations and other commercial establishments in the United States are already creating well-designed facilities in Europe that make a definite con-
tribution to the community. Landscaped fuel pumps at curbside in Rome and other cities, and the larger service stations with gardens and outdoor restaurants are a notable departure from the community eyesores imposed by gas stations in America. Service stations in Europe are often built into the corner of office buildings or installed in a median strip of grass and trees.

Such improvements in the urban environment could be duplicated by the location and design of automobile showrooms and used car lots. Most of Europe not only has been spared the blight of retail outlets for automobiles but has made these establishments among the most attractive commercial structures.

Retail merchants can also join in the campaign to make the street scene a welcome addition to the environment. Sidewalk and streetside restaurants and cafes are important embellishments. In Rome, Berlin, and other cities, the use of glass-enclosed sidewalk restaurants makes heating and air conditioning possible.

Advertising can be an attractive streetside embellishment. Neon advertising lights flush against the building rather than extending outward from it illuminate the building front itself and create an excellent effect. German cities in particular have demonstrated the aesthetic and commercial value of such lighting. The art of outdoor advertising is witnessed in Geneva, which concentrates neon advertising along the tops of the buildings; on the Champs Elysées, which makes predominant use of white light; and on Rome's Via Veneto, where the symmetry of signs creates an impressive total impact.

**PEDESTRIAN TRANSPORT**

The most economical short-haul transport with the best safety record is walking, and European cities are developing significant systems for improved pedestrian circulation. In at least a dozen European countries, city governments are working on pedestrian transport facilities that are an important central-city transport solution as well as a boon to shoppers and a distinctive addition to the charm of urban living.

The major pedestrian city is Venice. Mechanized traffic is confined to the canals, which accommodate both freight and passenger carriers, but dry land is reserved for the walker through an intricate network of alleys, walkways, stairways, bridges, plazas, and promenades. A modern new city could be served by a network of depressed highways similar in design to the main canals, with parallel walkways of various shapes and sizes, and underground parking accessible from the roadways. A simulation of the Venetian pattern would separate people from vehicular traffic and make the traffic network upgrade the environment.

For most cities some less ambitious and less costly pedestrian accommodations are suggested by European experience. One is simply to bar vehicles from certain streets during specific daylight hours, which involves no more than the cost of appropriate signs. Streets of this kind are located in the old town centers of Stockholm, Amsterdam, Barcelona, and Copenhagen. Pedestrians in these reserved streets have a tendency to trip over the curbs, however, encouraging the next step of paving the street to curb height with attractive building blocks, making a permanent pedestrian reservation that excludes vehicular traffic altogether. An impressive result is the Hague's Noordeinde, a brightly lighted picturesque street with shops and restaurants, tastefully designed lighting standards, decorative shrubs, and satisfied merchants whose retail sales have doubled since cars were banned. Comparable conversions on relatively narrow streets half a mile to a mile in length include Amsterdam's Kalverstrasse and a network of walkways in Cologne.

Restoration of bomb-damaged centers has led to the creation of larger pedestrian plazas, such as downtown Rotterdam's Lijnbaam shopping center across from the main railway station. The Rotterdam plan covers several blocks, and the promenades are bordered by stores with living quarters above them. England's Coventry provides another large-scale but less impressive pedestrian downtown.

Transport terminals can also contribute to the city's pedestrian preserves. Generally speaking, European transport terminals are designed to enhance surrounding properties and to make the life of the traveler more satisfying. Because the transport
user appears destined to spend a large proportion of travel time in waiting time, terminals should be made convenient for shopping, resting, recreation, and cultural activities.

Milan, Florence, Rome, Vienna, Copenhagen, and Turin have rail stations that are pleasing on the outside, are well equipped inside, and face large open squares and gardens. These stations provide colorful restaurants and drinking places on the concourses, moving picture theaters, attractive stores, and inside landscaping. There is strong evidence in favor of consolidated terminals built by public authorities over the current U.S. tolerance for inadequate private depots. Air terminal architects could contribute by applying some of their recent accomplishments to surface transport terminals.

The ultimate triumph of European pedestrians, however, is in new towns, especially in England. All of them provide central pedestrian shopping centers and a complete network of pedestrian paths from residential neighborhoods to the town center. Safety and easy access are afforded on a community-wide basis.

PUBLIC TRANSPORT

Most American cities depend far less on public transit than European cities. With the exception of a half dozen of the biggest U.S. cities, transit patronage is only 50 to 80 rides per capita per year. For Cincinnati, Memphis, Atlanta, and Seattle the figures are in the 70’s. For Kansas City, Minneapolis, Providence, and Indianapolis they drop into the 50’s.

In Europe, where densities are higher, incomes smaller, automobile ownership lower, parking scarcer, and transit better, public carriers are depended on to a much greater degree. An average of 330 transit rides are taken per person per year in West Berlin, Rome, and Madrid, and over 500 rides in Prague. London and Paris, with something over 250 rides per person, are below the New York figure but far above other U.S. cities.

European experience suggests that more acceptable public transit in American cities will require a much larger number of buses and a greater route coverage if the needs of the public are really to be met. It would perhaps be necessary to double the fleet of buses, but the cost of this expansion, if reflected in bus fares, would increase the price per ride substantially. Any increase in fares would lead to declining patronage so that, even though the quality of service would be higher, the number of people enjoying it would be reduced and there would be more demand for street space to accommodate private automobiles. In addition, the higher level of fares would increase the financial burden on low-income families.

It appears, therefore, that the improvement in services necessary to make transit users more mobile would have to be financed out of general taxes rather than from fares, and this suggests a re-evaluation of the idea of charging for public transit in the first place. The cost to the community of providing free transit, on the surface, might be minimal if any appreciable number of automobile owners shifted to transit in the rush hours, eliminating the need for additional street capacity and reducing the economic losses from congestion.

Additional questions are raised by European rapid transit. Europe is making major additions to existing rail rapid transit, much of the work in subways. Half a dozen cities are getting subways for the first time. Altogether 190 miles of new rail rapid transit lines are being built, and another 500 miles are planned. Only in Zurich has the electorate voted down a proposed subway system.

Riding European subways, and the surface and elevated rail lines that comprise these, creates a variety of reactions. Obviously some cities could not survive without the underground, and London and Paris are the two principal examples. These two cities have more rapid transit lines than all the rest of Europe. They also have the largest subways—96 miles in Paris, 85 miles in London. Moscow is runner-up with 62 underground miles, West Berlin is next with 35 miles. (No system in the world is as large as New York’s 138 miles.) The rest of Europe’s rapid transit systems are of relatively modest size. For example, Madrid has 20 miles, Stockholm 13, Barcelona
10, Milan 8, Glasgow 6, and Lisbon 5. All of these are completely underground except the Stockholm system, which is 37 miles long altogether, with about a third beneath the surface.

New systems are very different from old-style rapid transit. Ancient subways are generally dirty, overcrowded, and unpleasant, but the new ones are generally clean, cheerful, and not too crowded. All of them have the common attribute of moving the passenger quickly, except on trips that involve transfers in rush hours. Specifically, London subways are speedy ways to move in off-peak hours, but they are dingy and depressing. They are neither clean nor attractive, and they involve a great deal of walking and waiting, in queues for tickets and later for ticket inspection; in long, steep descents by escalator; in front of elevators; and in long passages and on dismal platforms.

But new lines in Milan, Berlin, and Stockholm are pleasant, clean, and quiet. The orange and brown system in Milan operates steel-wheeled cars that are almost silent compared to the older equipment in London and Paris, although the new rubber-tired equipment in Paris is quietest of all. The Stockholm subway has spacious and well-decorated stations, good equipment, and plenty of space. The Berlin system is also attractive and offers a civilized ride. The Rome system is clean and uncluttered but is not sufficiently extensive to make a noticeable contribution to the total network. The new Rotterdam subway is less impressive. Much of the line is above ground on an elevated structure that detracts from the area. The Lisbon system is clean and noisy, Madrid grossly overcrowded, and Glasgow and Hamburg inadequate in a variety of ways. Some of the new but unfinished projects appear to offer high standards, particularly the one in Munich.

Rapid transit in Madrid brings the whole question of traffic relief through subways into better focus. This city has very broad avenues, a relatively low ratio of automobile ownership to population, good bus service, and moves 500 million passengers annually on its subways. But Madrid, despite all these points in favor of low levels of street congestion, seems to be the most congested of all. In the central area of the Puerto del Sol, it is extremely difficult to find space enough to move comfortably on the sidewalks.

The reason for Madrid’s plight is that a million more people moved into the capital during the past 7 years. There are now 3 million people altogether. Population density per square mile is about the same as that in Manhattan. Subway extensions and modernization cannot change the basic fact that growth has been too rapid and densities are now too high to permit increases in transport capacity to relieve the pressures.

The one thing clear in Europe is that cities with the most extensive rapid transit systems often have the biggest traffic tie-ups. Subways do not automatically relieve congestion on the surface. What they do is allow more people to move and to move faster. The presence of a subway creates pressures for further concentration, so that the decision to go the subway route is a decision to accept greater size and density. But, if a new level of congestion is to be avoided, the subway decision should be accompanied by positive plans that put limits on the allowable population through ceilings on employment opportunities and economic activities within the built-up areas, and through the creation of alternative sites for urban expansion.

Sweden seems to have found a logical solution. The rapid transit system is part of the metropolitan city-building program that includes a renewed downtown for Stockholm plus a series of satellite suburbs planned specifically to absorb projected metropolitan growth. The transport system is aided both by planned developments and by the preservation of open spaces between the city center and the suburbs. Paris is now planning a comparable approach, with 6 satellite cities of 500,000 persons and rapid transit between each one and the central city. But elsewhere the approach is to design the subway to accommodate more crowding.

The lessons for the United States should find useful application in present plans for rapid transit in Washington. The plan for 98 miles of line, three times that of Stockholm, will not provide lasting relief unless it is combined with a definite plan for future metropolitan growth and control over other growth patterns. A rapid transit system could help to bring into being a federation of satellite towns connected to the capital
city, with surrounding open space preserved for useful purposes. This fourth largest rail rapid transit system in the world should not be construed simply as a traffic reliever, but as the means for accomplishing a new pattern of regional development that will provide permanent congestion relief through urban design.

INTERCITY TRANSPORT OPTIONS

One of the principal features of European transport that differs from ours is the reliance on intercity travel by rail. In 1965 the total volume of rail passenger service in 14 West European countries was 200 billion passenger-kilometers. The figure for the United States was 28 billion. And while U.S. rail patronage dropped 22 percent in the period from 1960 to 1965, eight of the European countries registered an increase. The only sharp drop was 15 percent in the United Kingdom. But the 50 million people in the United Kingdom were still doing more travel by rail than the nearly 200 million people in the United States.

These high levels of intercity travel by railway in Europe reflect in part the smaller number of automobiles in relationship to population, the short distance between cities, and in some areas the inadequate highways and heavy congestion. Shorter distances reduce dependence on air travel, and highway congestion and public policy combined may account for the lower patronage of intercity buses. But the staying power of the railways lies also in the speed, frequency, and convenience of rail service, the modern equipment, pleasant terminals, courteous service, and the scenic attractions that go with a train ride.

For Europeans the railways offer a welcome option—people can elect to go by automobile, plane, or train, and they exercise the option according to mood, distance, time of day, weather, season of the year, and a variety of economic considerations. The important point is that there is a choice, and often that choice is lacking for Americans. The urban dweller in the United States has an extensive network of air and bus services as well as good roads for automobile travel, but service from city center to city center is not as good in congested areas of the East and Midwest as it is by rail in Europe.

The question is particularly relevant in the eastern United States, as air delays and highway traffic combined with less than ideal weather conditions make the railway option for short hauls theoretically inviting. Where large cities that generate sufficient travel are fairly close together and as urban concentrations increase in magnitude, there is a case for the rebirth of surface transport by rail—with or without wheels.

On balance it appears that if intercity travel by rail is to be revived, the process will be similar to rail revival in cities. There are urban routes and urban areas in the United States where it is not possible to get along without rail rapid transit. These services will have to be modernized to far better standards than those now available. A comparable future is indicated for intercity rapid transit on the surface.

But the future of intercity travel may lie in the creation of opportunities to use it rather than in meeting an existing demand. Plans for new medium-haul passenger transport could be related to projected patterns of urban settlement and used to help achieve such patterns. Methods might include electronic guidance for highways, possible breakthroughs in the performance and economy of the helicopter, and the advent of guideways for wheelless cushioncraft such as France's Aerotrain.

It is a public responsibility to ensure an appropriate network of intercity passenger services, and to allow the situation to evolve on the basis of what individual airlines, bus companies, and railroads independently decide to do is not enough. The federal government should be projecting intercity public transport demands in the light of economic and technological trends, making a judgment as to what services are required, and arranging with private operators for the standards to be met and the options to be maintained. And networks of intercity transport should be designed as part of a program to bring about a pattern of urban settlement in the United States that leads us away from planless overcrowding toward a more thoughtful and rewarding use of the land.
TRANSPORT FOR NEW CITIES

The art of combining transport with other urban investments has reached an advanced state in the efforts of several European countries to create new towns and new cities. England, Scotland, Sweden, Italy, Yugoslavia, France, and others are resorting to new patterns of urban settlement to cope with the demands that confront them.

The relationship of transport to new towns lies in the basic concept of using the transport plan as an element in the design itself, delineating neighborhoods, providing adjacent lands for industry or parks, separating through traffic from living space, protecting pedestrians, and supplying the options of walking, driving, and using public transport. The idea is to balance the supply of transport capacity with the demands that may conceivably arise for their use. And though the objective has been thwarted by miscalculations, the important thing is that the calculations are made and the adjustments required to pursue the goal have followed.

Most of Britain's 22 new towns, in various stages of completion, were designed to accommodate 60,000 to 80,000 people. These towns were built on publicly acquired land—generally about 10,000 acres. The new towns have succeeded in creating a pleasant environment in scenic rural areas, with housing, shopping, schools, and recreation that far surpass conditions in the older cities. Considerable variety of industrial employment has been possible, but it is now recognized that much larger towns must be built to afford the variety of economic activity necessary for self-containment and interest. The newest new towns will be double the size of their predecessors.

Transport is a key factor in Scotland's new town of Cumbernauld. The city has been designed for good circulation with safety, using motorways, pedestrian underpasses and bridges, and an extensive system of pedestrian pathways. There is a local bus line focusing on the center of the town. A unique feature of Cumbernauld is the half-mile-long 8-story town center, which resembles an airport terminal. On the top are penthouse apartments, restaurant, central library, and meeting halls. On the lower levels are banks, department stores, beauty parlors, health center, eating places, offices, nursery, hotels, and recreation. At the bottom of all this is the roadway, the bus lines, and parking areas—ultimately 5,000 covered spaces. But transport is not necessary for every purpose, because local shopping needs are met by a general store for each 300 persons within the neighborhoods, and recreation needs are filled locally by play spaces at frequent intervals and by a playground for every 200 houses.

Nine miles from Glasgow is Scotland's first new town, East Kilbride, which covers an area of 10,000 acres with over 50,000 people and a projected population of 70,000. A large pedestrian area is set aside for the town center. Roads lead from housing areas to industrial estates that contain 4 million square feet of floor space with employment for 18,000 workers making jet engines, Schweppes tonic, telephone equipment, electric razors, record players, and thermostats. Transport requirements for East Kilbride were miscalculated. Originally it was planned that a one-automobile parking space would be provided for every 10 residents. The main highway was to pass directly through the town center. The allocation of land for industrial development was made without concern for parking. Along the residential streets now there are endless rows of parked automobiles forced to use the street because there is no other space.

Many of these limitations have been corrected in subsequent plan revisions. The town center has been designed for pedestrians only, and the main highways go around it. Loading and unloading are accomplished underground. One of the main highways is now being made a dual roadway, thanks to a spacious right of way. Pedestrians are provided with bridges and underpasses across major thoroughfares. A fourth industrial park has been acquired for the additional land needed by industry for parking of workers' automobiles, and shoppers' needs have also necessitated a redesign of the town center, including multiple-level parking.

East Kilbride's center is spacious and easy to get around in. Pedestrians are protected from rain by the large overhang roofs, and signs and advertising are used tastefully. New buildings at the center include moving picture theater, hotels, government offices, and close-by recreation in an adjacent park, including an enclosed swimming
pool and youth center. Another section of the town center yet to be built will be fully enclosed and air-conditioned. Neighborhoods also have their small shopping centers with limited parking, on the assumption that shoppers will come principally on foot. Typically the few shops include a baker, butcher, and grocery store; and a larger neighborhood center has in addition a health center and more variety in shopping as well as churches, dentist, and small cafes. There are also primary schools in the neighborhood and play fields and open space—10 acres per 1,000 population.

The atmosphere of East Kilbride is the outcome of many different factors—the countryside, the altitude, and the varied architecture and skillful use of color. But the street and transport plans have also made a major contribution. Trees and plantings and the use of remnants of land along the right-of-way for small parks add to the total picture. The underground installation of telephone and electric wires makes the street additionally attractive. And the street layout itself avoids uniformity, making good use of crescents and dead ends that can be passed through only along pedestrian walkways or stairways, sometimes with apartments using the air rights over the walkways.

The possibilities of minimizing travel by design are illustrated by the new town of Stevenage, England, 15 years after its construction. This town of 60,000 persons has one automobile for every two families. About 87 percent of employed Stevenage residents now find work within the town. Of all trips made within the town limits, 43 percent are made on foot, while 12 percent are by bus, and 24 percent by automobile. Bicycles and other two-wheeled vehicles account for about 20 percent of all trips. Individual transport by all methods, walking included, makes up 87 percent of the journeys, and public transport is the least important method of travel. Where distances are short, both old and young can make their own way on foot. On a typical Saturday, nearly half of all shopping trips are made in the neighborhood. The rest are destined for the larger town center, where 59 percent of the customers arrive on foot. Three-quarters of all school children walk to school; one-eighth ride bicycles. For social and recreational trips, 42 percent go on foot.

The principal explanation for so much walking in Stevenage is that 75 percent of all trips are less than 2 miles in length. In the outer ring of large cities in England, a third of all city journeys extend more than 5 miles one way. Little more than a tenth of the trips by Stevenage residents are that far. Perhaps the key to the success of Stevenage transport is a city plan that has permitted three-quarters of all workers to live less than 2 miles from their jobs (1).

In all these efforts, it is the combination of transport and structures that produces the results. Streets form the framework of the community, motorized traffic is separated from pedestrians, and the roadsides lend the commercial areas and living areas their unique character. The effect is to create roominess in the same amount of space that for unplanned urban areas of the same size would undoubtedly be a jungle. The new towns have made transport facilities play the dual role of moving traffic and at the same time of forming an integral part of commercial and residential neighborhoods.

A new approach to transport will be featured in one of the newest new towns, Milton Keynes, 40 miles northwest of London. This will be the largest British new town yet proposed, with 150,000 people. Construction began in 1969, and capital investment will be over a billion dollars. Goals include a wide range of living conditions to attract a broad range of social classes. Emphasis will be on employment in the service industries; on extensive recreation facilities, indoors and out; on high standards of educational and health services; and on the accommodation of increasingly complex and overlapping social activity patterns. Communications for the new town will be designed to provide uniform coverage and capacity over the whole town, or as near that as possible, with greater flexibility for the expansion that may come later.

The effort to deal with urban growth in Europe has produced other types of developments that take advantage of transport to create new planned suburbs. In Belgrade the response has been to move across the Danube and erect a whole new city of New Belgrade where there was previously almost no development at all. The result is a concentration of high-rise apartments with spacious green areas and parks, wide boulevards, and an outward migration of some government offices. Altogether, 100,000
people are being accommodated across the River, and the living conditions are vastly superior to the crowded and obsolete housing in the old city.

Belgrade's problems, with less than 2 million to care for, are of the same order of magnitude as Stockholm's. Stockholm has attacked congestion by creating satellite towns about 10 miles out. It has been public policy since the turn of the century for the city to buy land outside its borders to accommodate the long-term demand. Most of the new developments now taking place around the metropolis are on government-owned land. In some cases these suburban areas not immediately needed were leased back to the owners to be continued in agricultural uses, and the revenue earned has been used to pay interest on the funds borrowed for acquisition. As in England, the increased value of the land resulting from new town construction accrues to the public and helps make the venture self-supporting.

The subsequent uses of these publicly owned lands have been linked to the design of transit facilities. Suburban centers were planned around transit stations, with a main center at selected stations to serve the needs of several smaller communities. Thus there were developed a series of small suburbs of 10,000 to 15,000 people and an occasional main center of 50,000 to 100,000 people, all easily accessible to Stockholm.

In the past 18 years, 18 suburban units have been built, clustered into three groups around three main centers. There are about 250,000 people living in these suburban areas, and two more major clusters are planned. Undeveloped land has been preserved between the central city and the new suburbs. The suburbs themselves, with their attractive shopping centers at the transit station, are pleasant places that afford good multiple-family dwellings with spacious recreation areas. In the United States the same result might be accomplished with limited-access highways.

In suburbs of 40,000 to 60,000 there has not been a sufficient growth of suburban employment opportunities as yet, and only about 25 percent of satellite residents work near home. The percentage is declining. For this reason the new suburb of Jarva is being planned for 120,000 people, and it is hoped to supply 70,000 jobs to minimize commuting. The central city will then be used more as a regional shopping center rather than a focus of employment for the suburbs.

The new towns and new cities to come provide dramatic hints of how transport can be combined, physically and financially, with the whole city-building effort. Transport facilities can help build an urban community, and urban design can help resolve community transport problems. The same principles apply and the same possibilities can be exploited in central city rehabilitation and in conventional suburban growth.

In the United States what is needed is not new towns but new cities. Perhaps they should contain 250,000 people to 500,000 or more, and perhaps as many as a million. They could be one unit or a group of settlements comprising a regional city—a federation of communities with common services and other cooperative relationships. The achievement of this more orderly kind of development offers the possibility of using modern transport and communications to create the goals of improved urban living.

Tens of millions more urban people will have to be accommodated in the remaining years of the twentieth century. This can be done by spreading ourselves all over the countryside in suburban developments that never achieve integrity of design or a sense of community; by packing ourselves into denser and denser developments with fewer amenities; or by a combination of new cities and redeveloped old cities specifically designed to provide manageable communities adapted to economic conditions and technological realities.

A FEDERAL URBAN TRANSPORT PROGRAM

In conclusion, European experience suggests some steps that might be taken in the United States to make transport facilities and operations contribute to urban living rather than detract from it.

The first objective is to redesign the streets to create a setting in which housing and community development programs can be effective. This is the nontransport aspect of the urban transport program, and it introduces new concepts of public responsibility in the field of transport:
1. Revise the concept of city streets by shifting some of the emphasis from moving traffic to nonmovement functions that upgrade the environment.

2. Extend conventional roadside improvement programs in rural areas to include the urban streetsides.

3. Convert sections of streets to pedestrian walkways with appropriate aids to walking.

4. Add off-street parking and transport terminal responsibilities to those of public agencies in charge of streets.

5. Make available the necessary land for retail shopping, parks, play space, and parking through the elimination of unnecessary street mileage and marginal acquisitions at intervals along the streets.

6. Remove poles and wires from urban rights-of-way.

7. Provide appropriate lighting, street signs, and standards and limitations for signs and advertising, based on progressive practices on rural highways.

8. Construct major boulevards with semicontrol of access in conjunction with urban redevelopment programs, using rights-of-way for combined transport, parking, recreation, pedestrian promenades, and restaurants.

9. Undertake cooperative programs with private industry to enhance neighborhood values through appropriate location and design of commercial structures using the streetsides for business sites.

10. Provide full-time employment for low-income urban residents in a combined public-interest street remodeling effort designed to upgrade 100,000 miles.

The second objective is to improve urban public transport capabilities to make public transit goals-oriented in order to extend the benefits of urban living to the nondriving public:


2. Increase the frequency and coverage of bus transport, improve communications, and take other measures to upgrade passenger service standards.

3. Extend public transport responsibility to the provision of transit terminals to accommodate buses and to provide for passenger transfers among transport modes.

4. Apply the school bus concept in education to transit services for other social and economic goals in urban areas, such as operating buses as part of the recreation system, or as aids to the functioning of medical and hospital services.

5. Experiment with free transit, using Washington, D.C., to establish the costs, assess demand, and measure the impact on street traffic.

6. Modernize stations and equipment of rail rapid transit and subway systems in cities now served, but experiment with bus rapid transit before extending subways to cities not clearly needing them.

7. Make use of rail rapid transit or other high-speed transit investments as a means of implementing new urban regional patterns designed to create less congested cities.

8. Create joint public-private corporations for the provision of intercity passenger services by all methods to ensure that passengers have a complete service by the most appropriate combination of methods—an extension of the container concept in freight movement.

The third objective is to combine transport with urban structures and land use to make the transport network an integral urban design element and to apply transport financial resources to urban development. Included in this process is the design of new cities:

1. Extend the concept of corridors in a building to the design of street and transit facilities serving groups of buildings, making transport networks an integral part of community development programs.

2. Pool public funds for transport, renewal, recreation, and other community programs to achieve new urban designs and economies in land purchase and construction. Pool public with private funds where transport can be combined with structures to save
space, improve the quality of the urban environment, and resolve transport problems through building design and use.

3. Focus model city and redevelopment design on land uses and land use relationships that will help to overcome transport problems through nontransport solutions.

4. Establish a federal-state commission on future urban development, empowered to designate and acquire sites for new cities and to establish appropriate policies for preserving agricultural and park lands as buffer areas.

5. Shift the emphasis from transport planning for the relief of existing congestion to transport planning for the creation of new patterns of urban development designed to prevent congestion.

REFERENCE