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Congestion and Road Pricing*

by Walter Block

The Fraser Institute, Vancouver

Traffic congestion is one of the most stultifying, annoying and petty occurrences known to mankind. Vehicles which are capable of safely covering 150 miles per hour under specialized conditions, and 55 miles per hour under normal conditions, are limited to crawling along, bumper-to-bumper, at perhaps 5 miles per hour.

Congestion is a danger to motorists. Apart from the direct psychological buffeting, frayed tempers undoubtedly create traffic accidents. The vehicle, too, deteriorates at a faster rate than otherwise, and overheated engines, cooling systems, interior hoses, etc., are the cause of yet additional highway injury and death.

The economic losses are monumental, merely in terms of wasted time. A system more wasteful of manpower can hardly be imagined: thousands upon thousands of productive workers are forced to sit idle in many cases for ninety minutes in the morning rush hour, and another ninety minutes in the evening. Furthermore, there is the spectacle of millions of vehicles, standing virtually still, with their motors idling and using up scarce gasoline supplies, while the society at large calls in vain for oil and gas conservation.

Nor is congestion a phenomenon limited to the process of getting to and from work. In many large cities, practically anything out of the ordinary is sufficient to trigger it: the letting out of the opera, a movie, a ballgame; the attempt to go to or return from the beach, the golf course or shopping.

Traffic congestion reaches into all aspects of living: working, shopping, recreation. It insidiously cripples the ability of people to coordinate activities with one another, as it becomes virtually impossible to make exact appointments—a broad interval of time is usually the best that can be planned on.

One superficial indication of the gravity of the situation is the dramatic language used to describe it in otherwise sober and unemotional scholarly works. A. A. Walters, for example, in an authoritative mathematical and analytical tome, is moved to characterize "the congestion of towns and cities" as no less than "the plague of the century."[1]

The judiciary has taken official note of "the generally obnoxious [traffic-

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clogged] situation in midtown and lower Manhattan" by allowing chauffeur-driven limousines business tax deductions. U.S. Tax Court Judge Theodore Tanenwald explained: "[These expenditures] were ordinary and necessary."[2]

To put a numerical perspective on the problem, there were 3,815,807 miles of highway in operation in the U. S. in 1974, the last year for which figures are available. Of these, 3,178,152, or 83%, were classified as rural,[3] and only 637,655, or 17%, as urban. And yet of the 1,289.6 billion miles of motor vehicle travel which took place in 1974, only 583.5 billion, or 45%, utilized the rural roads, while fully 706.1 billion travel-miles, or 55%, were crammed onto urban highways.[4] In other words, the rural 45% of the traffic enjoyed the use of a full 83% of the total road capacity while the urban 55% had to content itself with a mere 17%.

Yet the problem is even worse than these figures would indicate, for the following reasons:

1. The classification of "urban roads" is itself divided into "Urban Arterial Streets," which comprise about 12% of the total, and "Other Urban Streets," which encompass 88%.[5] Although 60% of vehicular miles of travel occur on the larger (88%) subdivision, a hefty 40% of the traffic takes place on the cramped (12%) Urban Arterial Streets.

2. Use of the roads is not uniform throughout the day, or the week. Rather, it is concentrated by work patterns, into weekday mornings and evenings, and by recreation, into weekend times that vary with the season. Termed the "peak load" problem, this is widely held to be responsible for road congestion. James M. Buchanan, for example, writes:

> It should never be forgotten that the highway problem is essentially one of peak load. There is little traffic congestion, even in Manhattan, at three in the morning.[6]

Although almost everyone who has written on the subject has offered a solution to the highway peak load problem, there are a few commentators who are less sanguine. According to George Smerk, the problem will always be with us:

> It is obvious and inevitable, with larger numbers of people on the move, that the paths leading to the focal point of their movement will be crowded.[7]

And Buchanan, despite his advocacy of the pricing solution, would appear to agree:

> In attempting to decide how many resources should be devoted to highways and streets, society must choose between providing a structure which is too large in off-peak periods and one which is too small in peak periods. It seems certain that if enough resources were to be devoted to highway construction to reduce congestion to acceptable proportions in peak traffic periods, overinvestment in highways would be present. A highway system of compromise size would appear preferable. This

> would mean that some highway resources would be wasted in off-peak periods.[8]

There are even some writers, perhaps despairing of any solution whatsoever, who have tried to interpret highway congestion as *desirable*. Says Charles Meiburg:

> I have not meant to give the impression that it would necessarily be desirable to try to eliminate congestion completely. Some congestion may be not only useful, but also desirable.[9]

Meiburg cites the failure of several proposed freeway systems in the San Francisco area as evidence that the voters prefer highway overcrowding to the alternatives of more construction or heavy roadway-user taxes, a claim that seems possible to dispute.

There are others who claim that there is no "congestion problem." For example:

> A great many so-called urban problems are really conditions that we either cannot change or do not want to incur the disadvantages of changing. Consider the "problem of congestion". The presence of a great many people in one place is a cause of inconvenience, to say the least. But the advantages of having so many people in one place far outweigh these inconveniences, and we cannot possibly have the advantages without the disadvantages. To "eliminate congestion" in the city must mean eliminating the city's reason for being. Congestion in the city is a "problem" only in the sense that congestion in Times Square on New Year's Eve is one; in fact, of course, people come to the city, just as they do to Times Square, precisely *because* it is congested. If it were not congested, it would not be worth coming to.[10]

Clearly, Edward Banfield is here confusing "congestion" with "density" ("having so many people in one place"). These are not at all the same. While "density" connotes only a large population per unit area, "congestion" implies something untoward, or inefficient. The choreography of a ballet may call for the dancers, at some point, to be tightly positioned; they would then be characterized as achieving a high *density*. But if all the dancers keep to their proper positions, and the ballet is reasonably arranged, there will be no question of congestion. Instead, the dancers could be characterized as moving about freely, albeit in a tight formation.

To eliminate high density would indeed remove the city's reason for existence: the economies in manufacture, service and trade, which are engendered by close proximity. But surely discoordinative *congestion* could be abolished without affecting density in the slightest.

With regard to Times Square on New Year's Eve: *some* people attend the festivities to enjoy the congestion; they enjoy bumping into people, being detained in their progress in any direction, and being elbowed, shoved, and even stomped on. But *others* find the congestion unsatisfactory, although they may desire to live in an area of high density.

Banfield poses an extreme rendition of the "no problem" view:

> If these inner districts . . . usually adjacent to the central business district and spreading out from it [that are characterized by extremely poor and minority groups] . . . which probably comprise somewhere between 10 and 20 percent of the total area classified as urban by the Census, *were suddenly to disappear, along with the people who live in them, there would be no serious urban problems worth talking about.* If what really matters is the essential welfare of individuals and the good health of the society as opposed to comfort, convenience, amenity, and business advantage, then what we have is not an "urban problem" but an "inner-central-city-and-larger-older-suburb" one.[11] (Emphasis added)

One cannot but agree that *many* of our urban problems are intimately connected with the minority groups and the "poverty lifestyle" that are characteristic of our large urban inner cities, yet surely not *all* problems would be solved with the disappearance of this sector of the city. The destruction of human life on our highways, the serious congestion problems, the mismanagement by the road authorities would survive the evaporation of the inner cities, because these problems are completely unrelated to the inner city.[12] No amount of sophistry, moreover, can convert our present highway mess into something merely affecting the "comfort, convenience, amenity, and business advantage" of our citizens. If our transportation crisis does not sabotage "the essential welfare of individuals and the good health of the society," then nothing does.

Next consider the "unrealistic expectations" charge. Robert Bish and Robert Kirk write:

> Designation of "congestion" per se as a problem is not accepted by all economists. When one examines the travel time of journeys to work in urban areas he discovers that travel times are remaining constant at the same time the length of the journey to work is increasing. Thus, in spite of congestion the actual miles per hour speed of journeys to work is increasing rather than decreasing. It may be that considering congestion a problem relates more to a failure of expectations than a failure of transportation systems. The failure to meet expectations may result from the fact that as highway investments have been made to handle journey-to-work traffic, an individual's ability to move around an urban area at off-peak hours has increased tremendously, and he would really like to make his journey to work at a comparable speed. Thus, even though the actual miles per hour speed of the journey to work is increasing, the speed of the journey to work is increasing at a much slower rate than the speed of travel during the rest of the day, and the "problem" is a failure to meet expectations, not an absolute decline in speed of movement.[13]

James Wilson agrees:

> [The pseudo transportation problem is] simply the product of our natural but unrealistic desire to move instantly to any place at any time.[14]

John Meyer tells us:

> If there has been a slow but steady improvement in the performance of urban transportation systems, why do we hear so much discussion of a so-called "urban transportation crisis"? The answer lies in a complex set of considerations of which probably the most important is what might be termed "a failure of anticipations."
>
> This failure of anticipations is in great part a consequence of the uneven rates of improvement in off-peak and peak performances of urban transport systems. Traveling across densely populated urban areas at 50 or 60 miles an hour on a high-performance highway during an off-peak period seems to be an exhilarating experience, and urban commuters, quite humanly, would like to duplicate the experience during the rush hours. The difficulty, of course, is that too many of them wish to do so at one time and thus it becomes impossible without a vast increase in capacity.[15]

One problem with this tack is that there is simply no *evidence* to show that a set of "unrealistic expectations" has been adopted by the public because of the relatively better conditions at off-peak times. Rather, the argument seems to be that *since* traffic moves relatively freely at off-peak hours, *therefore* customer dissatisfaction with the rush hour state of affairs is due to unrealistic wishful desires for similar unencumbered travel at all times. (Wilson escalates even further, and claims that a desire for *instantaneous* travel is at the root of the disgruntlement; needless to say, he cites no evidence of this impossible consumer demand.) But this is a *non sequitur*, since it would be possible for people to demand better peak hour conditions even if the traffic situation at other times had not improved.

But more importantly, the argument fails to show that the demand for non-rush hour conditions during peak times *is* unreasonable. A whole host of business establishments, catering to a "rush hour" trade in other industries, have instituted arrangements for dealing with peak demands. The higher quality restaurants and hotels have initiated the practice of taking *reservations*, which insure against overcrowding and disappointed customers; theaters charge more for highly demanded evening performances than for (otherwise) sparsely attended afternoon matinees; vacation enterprises charge more during the "season" than in the "off season." To take some more peripheral, but still highly indicative examples, umbrellas cost more when it is raining (when there is a "rush" for them), shovels sell at a premium when it snows, and flashlight batteries fetch a higher price during "brownouts" or "blackouts." Our entire economy is permeated with arrangements which function in such a manner, so that the plight of the "rush" customers is relieved. Far from being "unrealistic," customer dissatisfaction with peak hour traffic jams is only to be expected—given all these other industries which function so as to *relieve* congestion.

Thirdly, the "unrealistic expectations" view makes much of the slight *improvements* in the speed of journeys to work, without mentioning the

abysmally low level on which the comparison is based, nor the sluggish pace we have achieved, presently, after the much vaunted change. This approach misses the important point; when there is a poor record of accomplishment, a marginal improvement is no justification.

We now turn to a consideration of the last reason for supposing that traffic congestion is really no problem at all: solving it would cost more than it is worth. Banfield writes:

> That we have not yet been willing to pay the price of solving, or alleviating, such "problems" [as congestion] even when the price is a very small one suggests that they are not really as serious as they have been made out to be. Indeed, one might say that, by definition, a serious problem is one that people are willing to pay a considerable price to have solved.[16]

There are some commentators who are even rash enough to apply this reasoning to the problems of safety. Robert Baker, for example, says: "A highway system of much safer proportions is obviously available, but the [costs, in terms of] loss of mobility would be completely intolerable."[17] And according to Martin Wohl:

> Those who are stuck in traffic congestion ... would rather make the same trips without congestion, everything else being equal, that is, providing they did not have to pay more for less congestion, or relinquish another amenity achieved by their choice of transportation mode.
>
> Traffic congestion *can* be reduced, and even eliminated, in a number of ways—*but usually not for free.* It generally will cost society, or some group within it, something to achieve such a goal.[18]

Wilbur Thompson is one writer who contends that traffic congestion is actually a rational outcome because of the costs involved in alleviating it:

> The urban traffic problem, like most problems, arises out of the frustration of trying to reconcile a number of partly incompatible goals. Urbanites would like to move about their area (1) quickly, (2) comfortably, (3) cheaply, (4) mostly at the same time, and (5) mostly to or from the same places. ...
>
> But congestion is too seldom seen as a direct, if harsh, form of economizing; we economize on urban transportation plant and equipment (social capital) by crowding many vehicles on a narrow street or by carrying standing passengers in packed buses. Through congestion, the commuter trades his time for lower fares, fees, or taxes; the lost time may be regained only at the cost of additional investment in transportation plant and equipment.[19]

A constant refrain in these passages is that solving the problem of congestion would be quite all right; however, to do this would involve the expenditure of monies, and *this* would be unjustified. But is it not true that the solution of *any* problem usually calls for the undertaking of some costs? And do we usually let this fact, and this fact alone, deter us? It may well be

asked, "What is so special about congestion that, upon hearing that its solution may well call for the expenditure of resources, we must at once conclude that to do so would be unjustified?"

Also implicit in this treatment is the assumption that somehow, somewhere, at some time (perhaps in the long distant past) some people were actually asked to choose between something like the present levels of congestion, for free, and a vastly improved, uncongested rush hour situation, for some appreciable costs—and chose the present situation. But this is the merest fiction. Despite the allegiance this assumption has been able to garner, there is not the slightest bit of veracity to it.

Of course, on the *market*, people are continually choosing between (usually) lower-priced but more crowded conditions, and more expensive, less congested alternatives. They do this in their daily choices to patronize, or not, a crowded fast food chain, a bargain sale at a local department store which they expect will attract large crowds, etc. The problem with our road network, in this regard, is that there is no functioning market in which the consumer can make his preferences known: there are no congested but cheaper highways competing alongside more expensive but emptier ones.[20]

Finally, there is the assumption that *if* an alternative were to arise, whereby the consumer could purchase less traffic congestion (or a lower likelihood of falling victim to a fatal accident), the costs would be prohibitively expensive either in terms of money, or foregone mobility, or other resources. Now this might well be true, *given* that the state remains in control of the road industry. It is perhaps correct to suppose that *given* our present institutional arrangements, we may be enjoying the best of all possible worlds in terms of our transit system, sorrowful though that world may be. But it by no means follows that the present method of highway operation is the only conceivable one, or the cheapest to maintain and operate. Indeed, it is the contention of this article that a free market in roads is not only feasible, but desirable.

We shall now examine, in some detail, the most popular "non-pricing" solutions to the problem of congestion. But even more importantly, we shall examine the assumption behind them: that those responsible for the present congestion mess shall and should continue to administer the highway system and be responsible for any and all attempts to improve it. We shall try to show that this assumption is not valid and that in fact a privately owned and operated highway system is the answer to the congestion problem.

a) Increased use of government rules. The first of the non-pricing solutions to be considered is the increased use of governmental rules. A general justification of this procedure is offered by Smerk, who opines that "some [governmental] rules are needed to preserve us all from the costly and painful chaos of transport anarchy." One problem with this argument is that, at least insofar as congestion is concerned, we are presently suffering from "transport anarchy" of the worst sort—and this, in the midst of a great number of government rules indeed. Secondly, while it may be readily con-

ceded that traffic rules of *some* sort are a prerequisite of any order in transport, it by no means follows that government is uniquely suited for the task of prescribing them.

One governmental initiative that stands as a perennial favorite is a call for staggered work hours.[21] Usually dependent on a "moral suasion," the solution of staggered hours is popular for several reasons. The government need do nothing: action is called for on the part of the employer, who, along with recalcitrant employees, can be made into a scapegoat for congestion during rush hours. Recommending that "employers stagger their starting and leaving times in order to reduce and spread out the rush hour peaks"[22] seems, moreover, to be the height of common sense. If the congestion is caused by great hordes of people entering the traffic flow at the same time, what better way of ending it than by staggering their work hours?

But there are problems with this simple, apparently rational view. Most restaurants, for example, are busiest during breakfast, lunch, and dinner time, and perhaps in some cases, after show closings, for late night meals. In other words, restaurants suffer from congested traffic, a peak load problem, during these times. But were a restaurant management seriously to propose that its customers stagger their meal times "in order to reduce and spread out the rush hour peaks," it would be laughed right out of business in a trice. Its competitors would have a field day.

Many bowling alleys are open 24 hours a day, but "suffer" from peaks of demand in the late afternoon and early evening, until perhaps 10 p.m. Some have solved this peak load problem by advertising cut-rate prices during the morning and early afternoon hours, in order to smooth out the flow. When such changes in consumer behavior are an endogenous result of price reductions, customer satisfaction can be maintained. But a mere exhortation to "stagger" travel demands can be interpreted only as a callous disregard for the consumer of transport services.

The proponents of staggering have failed to realize that there are economies involved in tailoring the working hours of the labor force into a common pattern. Cooperation between complementary labor factors of production is enhanced by a common workday. Exhortations may induce staggering on the part of employers of labor whose productivity benefits the most from the common work hours. This result might ensue if these employers are amongst those who are politically weakest, or who are more dependent on the good will of the governmental authorities.

In contrast, if a price reduction is offered for off-peak travel, all employers will be tempted to accede to the wishes of their employees for cheaper travel. The ones who actually give in and reschedule their work forces will tend to be the ones whose employees' productivity is increased to the least degree by working the same hours as the general labor force.

b) Reversible one-way streets; limited turns. A strategy adopted by

many harried municipalities is the conversion of two-way into one-way streets, to align the direction of the traffic in accordance with the path followed by the majority of the motorists (outbound in the evening, inbound in the morning) and to prohibit turns on and off these main thoroughfares – in order to keep their traffic moving as quickly as possible.[23]

Superficially, this sounds almost like a panacea. Turn limitation will speed the traffic along the artery, and the conversion of the direction of traffic (in all or some lanes) in accordance with rush hour patterns can hardly fail to improve matters. But in actuality none of the cities implementing this plan have succeeded in ending rush hour congestion. For while they have made better use of street surfaces than was possible with a set of two-way streets, there is still simply too much traffic for the streets to handle.

An analogy that comes to mind is the rush to the theater exits upon an announcement that there is a fire danger. All of the patrons are going in the same direction, but there are just too many of them for the exit capacity. A melee ensues. True, there is (somewhat) *less* chaos than would result if people were heading in different directions; but for all the effect of the marginal improvement, the problem remains unmanageable.

Not only does this policy similarly fail to stem the tide of street congestion; it also imposes distinct threats to the ease with which motorists may travel around the city. Every time a two-way is converted into a one-way street, the amount of territory that must be covered to reach a given destination is increased. For if the one-way streets follow an every-other-street-in-a-different-direction pattern, the motorist will have to go around the block in half the cases. And the greater the number of prohibited turns, the greater the difficulty in maneuvering. In New York City, for example, it is illegal to make left-hand or right-hand turns on 42nd Street during rush hours. Thus many (perhaps most) motorists have to go several blocks out of their way to reach their destinations. Clearly, turn-limitation can actually *add* to the already great use of the streets during rush hours.

How would the one-way versus two-way street conflict be handled under private ownership? It is not possible to be specific, but we can say with absolute confidence that the competition inherent in the market will ensure that road entrepreneurs will be guided by customer preferences. Let us suppose, as an example, that the Jones Road Company insists upon maintaining Jones Road as a one-way street, despite its customers' overwhelming desire for the convenience inherent in a two-way street. The Jones Co., clearly, will not earn as much profit as it would otherwise have done. Marginal tenants and storekeepers will move to other streets, where their wishes are more nearly satisfied. The Jones Street address will become less popular for potential customers as well.

It might well happen that while the local inhabitants prefer a two-way street, those who are just passing through would favor uni-directional

traffic. But this case presents no difficulties not already encountered by entrepreneurs faced with customers of non-homogeneous tastes. The installation of smoking and non-smoking sections has already solved similar problems in industries as disparate as airlines, restaurants, theaters and movie houses.[24] In like manner, there is every reason to expect similar responses from businessmen involved in the street business. One possible compromise might be one-way streets during rush hours, when the outside users would likely predominate over the locals, and two-way traffic at other times, when the street is likely to be patronized mainly by local inhabitants. In order for this plan to be viable, though, the owner must make the judgment that the extra costs, both in terms of installation and of possible increased danger due to confusion at changeover time, are less weighty, in the eyes of the paying customers, than the benefits.

If no such compromise is feasible, and only the profit and loss system, through trial and error, would be able to make this determination, then the road owner could be counted upon to choose that mode which he thinks will maximize his profits: *i.e.*, the one that will accede to the wishes of the customers who have shown themselves to be most concerned (by their willingness to pay the most in order to have things arranged in a manner preferable to them). There will be a "vote" as it were, including only those who are intimately connected to the road, and not, as under democracy, all those over the age of 18 or 21. The decision will be made in much the same way that it is decided to plant oats and not wheat on a given plot of land (because there is more money expected to be forthcoming for the former than for the latter).

c) Surveillance, monitoring. The magic of modern electrical technology is ofttimes put forward as a non-price-rationing panacea for highway congestion. Its proponents are not backward in their claims in behalf of this attempted solution. Says John F. Kain, for example:

> A revolutionary improvement in the quality and quantity of urban transportation services could be obtained in virtually every U.S. metropolitan area in a relatively short period of time. Moreover, this improvement can be obtained with expenditures that are no larger than those presently programmed. These gains can be achieved by converting existing urban expressways to rapid transit facilities through the addition of electronic surveillance, monitoring, and control.[25]

How would metered freeways work? Explain Bish and Kirk:

> A major problem with freeways is that as soon as more than 1500 cars per hour per lane enter them, traffic becomes congested, stopping and starting rather than maintaining a continuous flow. The congestion causes the flow of traffic on the freeway to fall well below 1500 cars per hour per lane. Monitoring freeway access forces cars to wait their turn on large on-ramps. Once cars are permitted to enter the freeway, the traffic flow is maintained at thirty-five to forty miles per hour, the speed

> that provides the greatest flow of automobiles. Thus, part of the trip is spent sitting still and the other part is spent moving at a steady speed. Total trip time is reduced.[26]

Although many economists propose electronic monitoring as part of an overall plan that includes such other components as express bus lanes, we shall consider the monitoring proposal on its own merits.[27]

In principle, there is very little wrong with this arrangement. But we would be foolish indeed to think of putting its administration into the hands of government. It calls for working with sophisticated electronic equipment, which is subject, potentially, to frequent breakdowns. One can scarcely trust an organization that cannot collect the garbage, deliver the mail, or fill in the potholes with such an onerous task. Nor is there any reason to believe that government is uniquely suited to the task of successfully subcontracting for such an operation. For subcontracting, too, calls for no mean level of skill. And surely we cannot blithely assume an ability to *recognize* the ability to maintain such a system—surely the prerequisite for successful subcontracting.

But even if run in an impeccable manner, the surveillance scheme would leave something to be desired. That is because it is an engineering solution, designed to maximize the transportation of vehicles through the highway network. As such, it is a viable scheme. But it does nothing to end congestion. It only *transforms* congestion from a situation where the waiting is disguised in the form of slow speeds, to one where the waiting becomes explicit in the form of long queues. It represents a shift from slowly moving traffic with minimal queues to quickly moving traffic with longer queues. Congestion disappears from the traffic lanes—but reappears at the side of the highway in the form of waiting cars.

In some ways, what electronic surveillance seeks to accomplish is reminiscent of the phenomena of reserving tables at restaurants. This too is an attempt to deal with overcrowding. Explicit queues *disappear*, but does the problem disappear? No. Only the place where the waiting occurs changes. And so it is on the highways. Electronic monitoring may well bring about convenience. But in the absence of programs designed to cut down on the *demand* for road services, it cannot solve the problem of congestion. It can only transform the congestion of slow moving traffic into quicker movement—*plus* overcrowded, or congested queues at the entrances to the highway.

d) Planning, zoning, building new towns. There is an increasingly popular viewpoint within the transportation community according to which it makes little sense to try to solve the congestion problem by itself, or in a vacuum. Rather, the true solution lies, first, in recognizing the present lack of cooperation between the auto and mass transportation on the one hand, and between both of these modes of transport and the decision of how to locate housing, shopping, recreation, and employment opportunities, on the

other; and secondly, in ensuring, by increased governmental planning initiatives, that all these factors are coordinated with each other.

With regard to the lack of automobile-mass transit synchronization, Owen argues:

> Clearly, the fortunes of both the automobile and public transport are interdependent. The success of each depends on what is done about the other. Yet in nearly every city in the world these two major parts of the single problem of how to provide adequate mobility for the urban population are being separately planned and financed. The outcome is reflected in the severity of street congestion, the absence of acceptable standards of public transport, the lack of genuine travel options, and the neglected travel needs of large segments of the population. The continuing rise in car ownership and the growing obstacles to providing satisfactory public transport point to the need for a combined strategy.[28]

Owen then justifies land use controls on the following grounds:

> Rapid transit solutions may also create congestion rather than alleviate it. For while some routes may never develop sufficient traffic to warrant a subway, the high density routes that do require such facilities may encourage areas of high-density growth that generate more transit traffic than can be conveniently handled without lowering service standards. *Without effective land-use controls*, the tendency toward greater concentration of economic activity will make congestion, inclusive of street congestion, worse than ever.[29] (Emphasis added)

On the coordination of land use and transportation through central planning, he writes:

> The basic difficulty of urban growth all over the world is that decisions about the use of urban land are being made by a host of private parties without the guidance of *comprehensive plans* or community goals. The result is heavy social costs, which include the high costs of a bad environment and large outlays for transportation and other services needed to cope with the outcome. Transportation technology is supporting a wide variety of undesirable cities and shoddy suburbs. The only remedy is to recognize that anything is technically possible and to choose the kind of environment to be sought. The laissez-faire city is likely to end in disaster.... Transportation technology will be able to serve effectively only if it is furnished as part of a total development strategy.[30] (Emphasis added)

Owen's case for "new towns," in order to combat congestion, is made as follows:

> These [congestion] problems can be solved in two ways. One is redesigning the old cities, to make way for "the new city in city". The other lies in guiding urban growth through a combination of new highway and transit investments plus public land acquisition to help bring about an orderly urbanization process in place of the urbanism that is accidental,

> divisive, and designed for *profit instead of for people.* Planning a nation's economic growth should be accompanied by planning for its spatial growth.
>
> The single-purpose, least-cost solution aimed at moving traffic will have to be abandoned in favor of creating an environment in which adequate shelter and decent neighborhoods are convenient to job opportunities, recreation, and all that urbanization, in theory, has to offer. Plans for transportation must shift the emphasis from coping with congestion to encouraging communities without congestion.[31]

Let us consider each of these points. We must begin by "conceding" to Owen that highway traffic and mass transit are *not* now coordinated with one another. In fact, it would be difficult to cite another situation where two such closely allied fields evidence such little complementarity. But the conclusion that this state of affairs points to the need for more government involvement cannot be sustained. For it is the government ownership and control over *both* highways and mass transit which is precisely responsible for the sad discoordination which presently prevails between them.

Urban mass transportation is presently almost entirely in the hands of local government. Indeed, the synonymous use of the terms "mass transit" and "public transit" is eloquent testimony to the fact that in the eyes of most people the only possible owner and manager of such transportation networks is the government. And, although it is commonly held, since individual automobiles are privately owned, that therefore the highway system upon which they move is under control of the market, this is, as we have seen, simply not true: the plain fact is that our road and highway systems are completely under the control of one level of government or another.

The defense of zoning, land use controls, and other attempts on the part of the state to determine the location of individuals and businesses must be rejected on similar grounds. For one thing, the government *already* deploys people and resources geographically. All big cities,[32] most small towns, counties, and states, and many regional planning associations boast of well-entrenched, thorough and detailed laws which narrowly restrict the pattern of land settlement. If these laws are already in operation during the congestion crisis, how can the solution to this problem lie in the direction of still more controls?

On the contrary, economic analysis points to the operation of the market as an antidote to such location-caused congestion. If, for example, housing is built on a massive scale in a place without adequate transportation or the prospects of such, it is simply not true, as implied by the Owen view, that hordes of people will first move in, either as renters or purchasers, and *then*, starting to worry about how they will travel to work, discover that they will be very cramped and congested.

In a fully free market, with all travel modes privately owned, things will in all likelihood work out very differently. Location decisions will ultimately

be approved or disapproved by the final consumer, as are all entrepreneurial choices. But in this case two different sets of entrepreneurs will together be responsible for launching projects: the builder and the transportation owner.

The builder, of course, determines the location of his edifices. But he cannot plan in a vacuum. If there are not ample sources of transport, either of the mass variety (trains, trolleys, buses, etc.) or of the "private" kind (the automobile on an individually owned road), he knows he will not be able to attract customers on a profitable basis. Before building, then, he will either determine that there are sufficient sources of travel access for his potential customers, or that there soon will be. In either case, he will have to involve the provider of the transit source in an appropriate (voluntary) contractual bind—otherwise the latter will be able to charge much higher transportation prices once the facility is built.

The transportation entrepreneur will have an incentive to entice the construction of additional buildings along the route of his holdings. Given the original investment, additional costs for additional riders are likely to be virtually zero. He can be expected to fall in happily with the builder's desires for assurances concerning future supply of service.

The only way congestion can occur in this kind of operation is if one or both sides commits a serious *error.* Abstracting from the possibility of below equilibrium transportation prices, congestion might take place either because of overbuilding compared to the amount of transportation services in operation, or from an undersupply of the latter relative to the quantity of residential units in existence. But this is no cause for alarm. For the market contains self-correcting devices to deal with mistakes which are unfortunately the lot of mankind, at least on this side of the Garden of Eden.

If congestion occurs on the free-market transportation network, the response is likely to resemble what accompanies "excess demand" for any other good or service: the businessman does not rest day or night until he provides the extra services the market is clamoring for. (We again abstract from the possibility of price increases.) The ice cream shop with long lines of people waiting for admission hires additional workers as soon as possible; the economist who "suffers" from the "congestion" of large numbers of people clamoring to engage him as a consultant hires more staff or expands output in whatever way seems appropriate to him. Throughout the private economy "congestion" is looked upon as a golden opportunity for expansion of output, sales, and profits. It is only in the public sector that the customer clamoring for additional service is looked at askance[33], blamed, excoriated—and told to desist in his efforts.[34]

Owen's contentions concerning the desirability of central planning for transportation are likewise without merit. It is true, as he contends and as we have seen, that transportation technology is uncoordinated with "total development strategy." But this is not because of lack of "comprehensive plans"; it is due to a *surfeit* of such government involvement in the

economy. The fate of the modern city might well be "to end in disaster." Certainly it is heading in that direction at present. But the modern city is, if anything, dedicated not to laissez faire, but to its very opposite.

Advocates of city planning, and of planning in general, ofttimes make the facile equation between their views and economic rationality. The implication is that a society which does not utilize a comprehensive central plan is acting irrationally, leaving important decisions to chance and inviting chaos. Nothing could be further from the truth, however.

Economics as a science can trace its beginnings to the discovery that men can coordinate their individual plans entirely without benefit of one overall planning body empowered to direct the whole society: it is precisely the function of the *price system* to impart the bits of information, known only in the most decentralized manner, to all participants in the economy.[35] One need not explicitly add up all bales of cotton, for example, in order to plan for cloth making, as the central planners would have it; by far the best way to use all the relevant information known to people in the cotton and cloth industry is to allow markets and prices to exist in these areas, and then to rely on the profit motive to insure that the two industries are coordinated with one another. An incipient shortage in either area will call forth market behavior which will tend to be self-correcting. There would be no need to mention basic postulates such as these but for Owen's complete and utter misunderstanding of the function of profits. One cannot, in a market setting, earn profits in any other way than by producing "for people": by producing, that is, what people are willing to purchase.

Owen's case for "new towns" as a means of avoiding traffic congestion is likewise unconvincing. New towns cannot possibly counteract traffic congestion if they are built and managed on the identical principles that have caused this problem in the old towns. They would only repeat the problem. And since Owen is not urging the creation of new towns by private enterprise, where the price system would be allowed to operate on the roadways and thereby guarantee an end to congestion, there is little merit in his proposal.

But mere speculation as to the effect of new towns on congestion is no longer necessary. Many such towns have been built in the past several decades, in the U.S. and in other countries. None of them has been noticeably congestion-free. In this case, at least, the facts speak clearly for themselves.

e) Expanding roads. One of the most popular antidotes to congestion is to build more roads. This solution, benefiting from the seeming presence of common sense, has attracted widespread attention and praise. As Buchanan reports, "the recommended solutions usually take the form of expansion and reconstruction of the highway system, all of which involve considerable additional investment of resources in highways and streets."[36] Mohring goes even further. In his view,

> Currently, the only technique being employed to an appreciable extent to alleviate urban traffic congestion is investment in additional highway capacity. Some of these additions to capacity have involved widening or otherwise altering existing arterial streets, but most of them have involved the construction of entirely new, high-speed, limited-access expressways.[37]

Even Brownlee and Heller, who might have been expected to know better, given their understanding of the role of highway prices, go along with the groundswell in favor of building our way out of traffic congestion. They state that

> without raising the amounts spent by highway users, excess demand also can be cured by drawing on the general taxpayer to increase the supply—as some auto manufacturers and the American Automobile Association will testify.[38]

Ofttimes, in addition to calling for increased roadway investments, specific designs are also advocated. Wohl, for example, favors building roads to bypass Central Business Districts of large cities since "through traffic as a proportion of downtown street traffic . . . usually ranges between 30 and 60%."[39] And Morris, in a thinly disguised call for an increased roadway supply, favors "using urban freeway design criteria which give preference to considerations of peak hour capacity rather than off-peak travel time."[40]

Although widely praised by economists and virtually viewed as an axiom of business by much of the transportation community, this solution has not gone uncriticized. One major criticism is based on the concept of "traffic equilibrium." According to this view, all attempts to solve the congestion crisis by increasing the supply of roads is doomed to failure—for as soon as a new facility comes on stream, it attracts riders from other roads, from other modes (such as mass transportation), and from the pool of motorists who, in the absence of the new road, traveled at less convenient non-rush hours. And the process will tend to continue until the congestion levels on the new installation are indistinguishable from that on all other avenues. It is then that the system will have arrived at a new traffic equilibrium. In short, "supply creates its own demand."

This view was expressed by Dyckman as follows:

> Additional accommodation creates additional traffic. The opening of a freeway designed to meet existing demand may eventually increase that demand until congestion on the freeway increases the travel time to what it was before the freeway existed.[41]

A definitive explanation is given by Bish and Kirk:

> If people would really like to travel at uncongested speeds during the journey-to-work hours, just how much additional highway investment would be necessary? If one looks at engineering forecasts for freeway travel before the freeway opens and the actual freeway travel shortly

> after opening, one is continually amazed at the lowness of the peak-hour forecasts relative to actual travel. Far in advance of the time predicted, the new freeway has traffic beyond "capacity" and is congested again. Why does this happen over and over again? There are essentially two reasons. First, there is usually more than one highway route to work that takes approximately the same amount of time. This is because if any route were significantly quicker, travellers would shift to that route, increasing its congestion while reducing congestion on the formerly slower route until times were equalized. Thus, when a new route opens up, traffic using a variety of former routes will switch to the new route until travel time on the new route is equalized with time on adjacent routes. If former routes have been city streets and the new route is a freeway, equilibrium may not be established until freeway traffic is very slow and congested. However, travel time will be less on both the new and old routes because of the increase in highway capacity.

But these gains, even in reduced travel time, if not in reduced congestion, are likely to be dissipated. Bish and Kirk continue:

> A second reason why new routes congest prior to forecast is simply that when transportation capacity increases and peak-hour time decreases, fewer drivers will take the trouble to beat the rush. Instead, they will travel closer to the time of their actual preference. Thus as traffic capacity increases, there is a shortening of the rush hour, but very little reduction in congestion during the new shorter peak-hours of travel.[42]

It would appear that the "build more roads" solution to traffic congestion cannot withstand the force of the "equilibrium" argument leveled against it. But before we move on, let us consider a possible criticism. We have already stated that the market, unlike the government, looks upon "congestion" as a simple case of excess demand and, in effect, "rolls up its sleeves in glee" in the anticipation of new and profitable sales. In other words, the market expands seemingly to meet excess demands. Why then, when the government tries to "expand" its offering, by building more roads, does it fail so dismally and apparently so inevitably?

The answer lies in the concept of price: when charges are prohibited, i.e., when there is a zero price for highway use, then and only then, attempts to build our way out of congestion are doomed to failure. As long as highway services are "free"—as long as people pay for them whether they use them during peak periods or not, and pay no more for this use than for non-use—then the "equilibrium" phenomenon will tend to consign to failure all attempts to cure congestion by adding to the highway stock. Private enterprise, too, would "fail" if it were prohibited from charging a price for services rendered.[43]

It is when positive use prices are *allowed* that businessmen see an opportunity for profit making by curing the excess demand, or "congestion" situations. It is here that private enterprise shows itself head and shoulders above the bureaucratic statist system which operates without benefit of prices for services rendered.

f) Automobile banning. A solution to the congestion problem widely beloved of some less sophisticated economists and of many popular writers is to ban cars from crowded highways. On the most simplistic level, the "reasoning" seems to be that since road congestion consists of too many automobiles, the best and surest way to end the problem is to ban the offending vehicles.[44] A slightly more cogent argument is that while automobiles usually carry between 1.2 and 1.5 passengers per vehicle, a bus, taking up no more than two and one-half times the highway space, is able to carry up to 50 passengers at a time.

The problem with both views, of course, is that they treat human beings as homogeneous units.[45] Underlying both is the democratic or "nose-counting" approach to economics which imparts a false equality into the analysis. For the trips of human beings are *not* all equal. That a bus can carry, for a given road space, a multiple of the people who can travel by car, does *not* mean that the bus is doing more "work" than the car. Even less justified is the assumption that the value of the bus's services is equal to the same multiple by which it carries more people than a car.

Perhaps a numerical example will clarify this point. Suppose that the average car carries 2.0 passengers per trip, that the bus carries 40 people, and that the bus takes up twice the highway space of the auto. Dividing the 40 people in half, we arrive at 20 as the number of people carried by a bus of equivalent size of a car. Can we say that the bus is doing 10 times the amount of work being done by a car, since the former carries 20 people, while the latter only carries 2? No we cannot, unless we make the further assumption that all people concerned are homogeneous in terms of the value they place, or which are placed on their trips. To take only the starkest example, all 20 people in the bus may be out on a pleasure tour, the value of which to them is barely above the costs of the fare they had to pay for the trip. And the two people in the automobile might be a man and his pregnant wife, rushing desperately to the hospital for a delivery. Not only is it not true that the bus is doing 10 times the work of the auto; it is by no means clear that the bus is even doing *more* valuable work than the private vehicle. William Vickrey, one of the few economists to clearly apply this point to transport, criticizes "an aggregate made up of components which, through happening to have a common physical unit of measurement, are economically quite disparate."[46] It is, moreover, impossible to determine whether the bus or the automobile, in any given case, is doing more valuable work, in the absence of a road pricing system which allows them to bid against one another for scarce road space.

Issue has been taken with this point by Thompson, who holds that under certain circumstances "an outright ban on automobile traffic becomes an approximation of and a rational substitute for a cost-based price." And the special circumstances? "If it is generally agreed that the price that would be charged for automotive access to the Central Business District (C.B.D.)...

is so great that no one would pay it." Thompson reasons: "Whether the demand for automobile movement was priced out of the core area by [high prices], the effect is the same."[47]

There are problems with Thompson's views, however. For one thing, they assume far too much. How can we ever know, in any particular case, of "general agreement" with the proposition that the price will be so high as to deter all potential motorists from the C.B.D.? Secondly, even if there is "general agreement," there still may be some consumers with non-average tastes who might willingly patronize the C.B.D. roads, even at what are considered to be outrageously high prices by most people.

But let us even suppose that at any one time Thompson is right, and that no one actually would willingly pay the very high prices needed for access to the city streets. Still, a ban is not a good approximation of a price system. For someone could *change his mind* about the benefits of such travel compared to their costs, and decide to patronize the road. Under a price system, what would happen would be akin to any slow, or non-selling, highly-priced item suddenly rising in the estimation of the consumers: more of it can be sold. But under an outright ban, the whole system will have to be dismantled in order to allow this change in consumer rankings to be translated into action. It is only if we assume perfect initial knowledge, and no changes in consumer preferences thereafter, that the Thompson approximation makes sense. But these are truly heroic assumptions.

Roth[48] has set out four criteria for judging systems which seek to reduce highway congestion. First, selectivity: a system should be able to distinguish those road users whose needs for the service are immediate and pressing from those whose needs are of a lesser intensity. Second, flexibility: it should discourage use of crowded roads only, not of empty ones. Third, practicability: it should be "simple, fair, cheap and enforceable." Fourth, remediability: the system should be able to pinpoint the trouble spots, and act automatically to remove them. And how do automobile bans, or a system of partial bans, stack up? Says Roth:

> Restraint by permit does not commend itself by any of the criteria. The granting of permits would have to follow rigid rules and generally could be neither selective nor flexible. A permit system would give no reliable guidance on investment policy, as it would provide inadequate means of measuring the *intensity* of the demand for road space. It would involve the creation of a new bureaucracy to investigate the transport requirements of all car users in order to find out which are, and which are not, "in the public interest."
>
> The idea of a permit system is bound up with the definition of the "essential" vehicle, but this is so difficult that it cannot be usefully pursued. A doctor is usually considered as an obvious "essential" user, but even his permit would raise problems. Would he be entitled to use his car to take his family to the theatre? Some might say that he should not, but what would be the position if he were "on call" at the theatre and liable to be rushed out for an emergency at any time?[49]

Sometimes the banning of automobiles is urged because of an alleged animosity between "people" and "automobiles." Wilfred Owen writes in this regard:

> In an age of urbanization and motorization, the way people live and the way they move have become increasingly incompatible. . . . In an automotive age, cities have become the negation of communities—a setting for machines instead of people. . . . Economic and social progress should not be impaired by an unnecessary discord between living and moving. . . . In all the world's major cities, from Bogota to Bangkok to Boston, the conflict between the city and the car is at a point of impending crisis.[50]

And, in the opinion of *The Economist*, "the need to limit the intrusion [of automobiles] into the places where people move, live and work" is "irrefutable."[51]

This alleged conflict between "people" and "automobiles" is entirely manufactured—unbelievable, and impossible to parody sufficiently. Were a Martian to learn of the widely portrayed "life and death struggle" between them, he would have to be excused for supposing that these are two different kinds of creatures, vying for an inhabitation of the earth which could be granted to only one. Dare it be mentioned that one of the "protagonists" is a completely inanimate object, invented solely by, and for the use and satisfaction of the other? And that contrary to what might be implied by certain writers,[52] the car has not taken on supernatural powers which enable it to "body snatch" human beings, or any other such invasive act?[53]

It is completely fallacious, then, to speak of "cars vs. people." If even a modicum of common sense is to be introduced into this discussion, the problem will have to be treated not as a conflict between humans and inanimate objects, but between *some* people, who want to use automobiles for some purposes, and *other* human beings, who are opposed to such (or any) use of these machines. Given this translation, the problem transforms itself into the more usual and hence more manageable conflict over scarce means and competing ends.

With *any* scarce resource there are *always* two (or more) individuals or groups who want to use it for different purposes. And the usual method of deciding between the contending groups is the price and private property right system. The *owner* of a given property is the one who decides whether it shall be used as a bowling alley or auto showroom, for example. And it is through the price system that those who wish to use the property in question are able to register their preferences.

The reason insoluble difficulties appear in the conflict over "cars vs. people" is clearly due to the *absence* of the institutions of prices and property rights as applicable to roads. There *are no* road owners who can presently decide whether to allow their properties to be used (at different hours) by people *with* cars or by people *without* cars. There is now no price

system which can determine whether the demand for the given road is greater on the part of those *people* who wish to use the road in conjunction with their autos, or by those *people* who wish to use the roads without benefit of these machines.

Another argument against automobile banning is that, *at best*, it will not *solve* the congestion problem but will only *disguise* it. We have seen that electronic surveillance would shift congestion from the roads to the highway entranceways; automobile bans will not transfer the congestion to such an easily seen place, and, therefore, it may be more difficult to realize that the congestion will still exist. After all, the roads will be relatively uncrowded, and there won't be any jam-ups on the entranceways. But the effects of the ban will not vanish. The results will be "seen" in the inconvenience of those who are forced from their first preference, the automobile, to mass transportation; in the lessened mobility of those who, having to give up their autos, and facing unappealing mass transit choices, opt to stay at home, or make fewer trips; in the increased spatial integration of residential, employment and recreational opportunities, which was uneconomic given reasonable transportation opportunities, but which comes into its own, given a transportation breakdown.

We must make no mistake about it: The individual motorist vastly prefers his private mode of automotive transportation to most conceivable mass transit alternatives. Even a fanatical adherent of public transportation such as Owen admits this:

> The automobile, notwithstanding its shortcomings, is at the top of the list of what most people want, whoever they are and wherever they live. High taxes and restrictive policies designed to discourage car ownership have not had much effect, nor have the inconveniences of urban traffic. People still drive under the most adverse conditions, or they move out when conditions finally become unbearable.[54]

The usual reasons for this state of affairs, which is vexing transportation planners the world over, are the auto's advantages *vis à vis* mass transit in terms of privacy; package-carrying ability (especially for shopping); seating availability; safety and amenities. Furthermore, the automobile is supreme in flexibility—starting from and going to wherever the rider desires. It can be no accident that while mass or public transportation is almost wholly owned and operated by the government, only *part* of automobile traffic is state-controlled: the roadbed, but not the vehicle.

This does not mean that under private enterprise motor vehicles would never be prohibited or their use never restricted.[55] The difference is that under private enterprise, the market would have a "voice" in the decision-making process, albeit indirectly. Assume, for example, that a road-owner decided to close off his road to private automobiles. If his decision was wrong, his profits will decrease. Disappointed motorists will turn to other road owners, willing and able to pay increased charges. The road-owner

may, as a result, change his policy. If he does not, he may be driven toward bankruptcy, the better to encourage reorganization of the road-ownership, and the substitution of a more rational policy. Needless to say, citizens have nothing remotely resembling this degree of "power" over their governmentally placed transportation officials.

g) Special bus lanes. What about special advantages for buses? Most often, highway lanes reserved for the sole use of buses is the specific suggestion.[56] Although this privilege is only extended to the "freeway flyers"[57] during the rush hour, it is an important advantage indeed. Automobiles are prohibited from entry, except in some cases for short spans, or in order to make turns. This often allows the bus lane traffic to move at 40 to 50 m.p.h., while hordes of private automobiles must sit by impotently, choked in congestion made even worse by the special treatment accorded the mass transit mode.

As we have seen, this scheme is fatally flawed by the mistaken homogeneity postulate. It is only if the collective preferences of the bus passengers outweigh those of the motorists that any economic rationale can be used in defense of this plan. But since there is no market, by assumption, there is no way to register or compare competing desires for scarce peak hour highway lane space. Shorn of any possible economic underpinning, the scheme is exposed as a return to a society of status, not contract. Certain groups are privileged. Others are downtrodden. Caste-like, bus travellers, whatever their intrinsic "merits," are placed in a higher category than automobile users.

A sharp distinction must be drawn between two seemingly similar situations: (1) special bus lanes by fiat, and (2) special bus lanes that are the result of the operation of the price system. Paradoxically, the exact same result may follow—that is, the identical road use pattern may come about from road pricing as from executive orders. Nevertheless, the economic welfare implications will be very different. If, as a result of the free-market price system, buses are able to outbid automobiles for use of reserved, limited access peak hour highway lanes, then we may legitimately conclude that all parties to the transaction are beneficiaries—otherwise they would not have entered into contractual arrangements. No such conclusion follows, however, from the establishment of bus lanes without benefit of the price system.

Under a price system, there is reason to believe that special bus lanes *would* ensue.[58] Jumbo jet airlines serve so many people that they are able to bid scarce airline runway space away from those who use private and corporate jets, even though the latter are presumably much richer on an individual basis. The same phenomenon is likely to be repeated on our nation's roads. Although there will be some limousines, taxicabs, jitneys, and the odd Maserati or two which will be able to bid for privileged lane space on an equal (or favorable) basis with the much more crowded bus, there is

little doubt that the mass transportation buses will be able to dominate special lanes. Nor is there much question that the private road owner will find it in his interest (as governmental road managers have *not*, for the most part) to institute special lanes, perhaps in conjunction with electronic monitoring devices, which will allow higher peak hour speeds, albeit at a higher road price. If he does not, and there is an untapped demand for this service, his competitors will take advantage of this gap. The recalcitrant road owner will, in any case, earn less money than otherwise; for this reason alone we can expect a tendency toward express lane provision.

The economic efficiency of a finely tuned price-oriented express lane system will be formidable. True, a fiat system might be able to make allowances for emergency vehicles such as fire-fighting apparatus and ambulances. But it is not easy to distinguish finely between the *emergency trips* of such conveyances, when it is of the utmost importance that they be sped along, and other journeys, such as the return to base. Nor will the fiat system be able to distinguish between a full and an empty bus. Nor between a full bus where higher price tickets are sold and a faster trip is promised, and one in which slower, cheaper service is promised to an equally packed bus.

Among some writers, a fiat express lane for buses is justified not for its own sake, but as a "second best" policy. Since it is "politically impossible" to institute such a system based on prices, and it is important to have express bus lanes, it is argued, a fiat system, while not ideal, may be the best possible alternative.[59] The difficulty with this line of thought is that there is no scientific way of *proving* that fiat bus lanes really is the policy next best to that which would result from the operation of a price system. It may well *not* be the second best policy. Moreover, it is poor strategy for economists, the supposed "experts" in the matter, to relinquish the defense of the *best* policy, in this case, an operational price system.

Perhaps the most disheartening thing about the reserved bus lane proposal is not the idea itself, but the manner in which it is to be tested and introduced. Not surprisingly, it is the state that is called upon for this task.[60] But this is the very institution which has so far *not* seen fit to institute the program on any widespread basis.[61] There is a contradiction lurking here. For if the reserve lanes idea is a good one, *and* the highway authorities are competent, then *they* should have been the first to have thought of and implemented it. Given that they have not done so, and that instead the impetus for the program has come from outside sources, then *either* the idea is unsound, *or* those responsible for not implementing it so far are incompetent. Those who want reserve lane systems instituted by the present authorities cannot logically maintain that those bureaucrats who have so far failed in this regard are the most qualified to control them now.

h) Improved mass transit. What about proposals for the much-lauded car pool, which consists of individuals who formerly rode alone, now shar-

ing the same vehicle?[62] If undertaken by a sufficient number of commuters, the effect of car pooling will be to drive up the "load factor" (the utilization of each vehicle), while reducing the number of (almost empty) automobiles clamoring for limited road space during peak hours.

One drawback is that for successful operation, car pooling requires people who live *and* work in close proximity. Except in the case of towns dominated by one large company, for example, a steel mill, where most of the workers live in the same neighborhood, this condition is unlikely to prevail. In most cases, people who live together are not likely to work together and vice versa.

A distinction must once again be drawn between ride sharing which arises as the natural reaction to a road price system, and that which is compelled by government fiat. In the former case, but not the latter, fine distinctions may be made between those who can benefit from pooling and those who cannot. An arbitrary edict that a pool consists of not less than 4 passengers (including driver) will exclude the marginal benefits available to the system via the price mechanism which will encourage shared rides between 3 or even 2 people. An *individual*, even if willing to pay the price commonly shared by 4 or more, would be forbidden road access. Once again, the non-pricing solution is seen to ignore the heterogeneity of human plans and purposes. Pooling is necessarily inflexible with regard to the size of the passenger load, as well as with regard to the desires of the road service consumers.

What of attempts to speed up and increase the capacity of trains and buses through increasing the length of trains and using skip-stop service on both modes of transport?[63] Skip-stop operation has its problems, too. It works by first assigning bus or train stops as either *A, B,* or *AB*. Vehicles are then either assigned an *A* route, a *B* route, or an express *AB* route. The *A* train, for example, stops only at *A* or *AB* stops, *skipping* all intervening *B* stations. Speed is increased, as fewer stops are made, but the question is, does this advantage outweigh the inconvenience of a person's having to switch from the *A* line to the *B* line through the intermediation of an *AB* stop—or having to go *backwards* if the line is laid out as follows: A_1, B_1, AB_1, A_2, B_2, AB_2 . . . , and one wants to travel from A_1 to B_1. (In this case, one would have to proceed from A_1 to AB_1, and then *back* to B_1.)

The problems with increasing train length are: (1) it usually entails a large capital investment in order to build up the train station to a capacity sufficient to handle the larger-sized train, and (2) there will be a greater need for police manpower to cover the extra cars, at least in the large urban centers where armed robbery is a force to be reckoned with, even during the crowded rush hour peaks.

Another solution to highway congestion proposes to aid mass transit not by speeding it up but by enticing motorists out of their cars. If enough people can be attracted into buses or trains by quality improvements (more

convenience, decor, luxury, etc.) then, it is hoped, traffic tie-ups will be reduced.[64] But this proposal has run into difficulties. As we have seen, automobiles are very popular for a number of reasons, and it has always proven difficult, if not impossible, to "entice" the American motorist out of his car. One transportation critic, John Rae, has gone so far as to label this hope a "myth."[65] In the United States, at least, "a man's car is almost as much his castle" as his home.

It must be stressed that there is nothing *intrinsically* objectionable about any of these solutions: car pools, or skip stopping, speeding up trains, making them longer, or even making mass transit more attractive than alternative modes at the margin, for some people at least. There is nothing in any of these attempts to improve mass transit that, in principle, could not take place naturally in a free market. What is objectionable in these scenarios is that without a market system it is not possible to determine scientifically which is most worthwhile. "We need to know," asserts Wilbur Thompson, for example, "whether a luxury class, rapid mass transit system can be self-supporting."[66] But the only way to know definitely is to allow businessmen to set up such services, and see if they succeed in earning a profit. All the hand-wringing, quibbling, debating, and second-guessing in the world cannot take the place of the profit-and-loss system in determining the economic viability of any of these solutions.

i) The free fare. Free mass transportation is sometimes advocated as part of an aid package to encourage motorists to forsake their autos in favor of public modes of transport.[67] The argument is that, if sufficient numbers of people can be so tempted, highway congestion will be reduced. Free fares are also defended on the ground that they will save heavy collection costs, which are a high proportion of the total transportation bill. If no collections are made at all, then at one fell swoop the whole panoply of toll booths, tokens, change-making machines—and the labor necessary to service them—can be eliminated. And similarly, the more sophisticated electronic and computer-based pricing technology that is likely to be employed in the future, would be obviated.

In addition, several other cost considerations are cited in favor of free fares. Scheiner and Starling, for example, propose:

> First, to the extent free-fare induces drivers onto public transit, the bus itself is able to move faster; and increased vehicle speed means lower operating costs.... Second, free-fare reduces running time by reducing boarding time, which can consume as much as 18% of total running time. Under free-fare, fare box queues would be eliminated and passengers could board through both front and rear doors. Third, fare collection equipment maintenance and cash, token, and transfer handling requires about one person for every ten buses—under free fare, this would be eliminated. For a 100-bus operation, approximately $100,000 annually could be saved in personnel reduction alone. Fourth, transit liability insurance, costing $.04-$.06 per mile, would probably not be

> required; with the patron paying no consideration for the trip, it would be taken at his own risk.[68]

Another strand of the argument in favor of free public transit proceeds gradually from the attempt to speed up vehicle movements. Instead of going directly to free fares, the first step is the call for exact-fare collection, as an intermediary. Owen's statement that "Requiring exact-fare collection on the buses has also introduced inconveniences that suggest eliminating fares altogether as a logical next step,"[69] is a fair portrayal of this view.

These arguments, or ones like them, may have had some influence, for the free-fare idea has become a reality. Seattle's "Magic Carpet" and Dayton's "Downtown Area Short Hop" (DASH) are described as "no fare-zones" if not "full-fledged free-fare transit programs."[70] But, as in the case of Wilkes-Barre's experiment with free fares in the aftermath of the destruction of Hurricane Agnes in 1972, the evidence for or against the program is conceded even by its proponents to be inconclusive.

The free-fare arguments have not gone unchallenged. The difficulty is that:

> The present patrons of mass transportation are really a more-or-less captive group who cannot use an automobile for one reason or another, (thus) their demand for transit service is relatively inelastic. Cutting or eliminating the fare would not increase ridership significantly, except perhaps for some offpeak, short distance riding as a substitute for walking.[71]

The difficulty with elasticity measurements, of course, is that they are not constants which exist in nature, equivalent, for example, to the fixed coefficient of gravity. On the contrary, they are highly dubious attempts to measure the response of one group of people, in one city, on one day, to an elimination of fares. If the experiment were carried on in a different city, or for different people, or on a different day, or at a different time of the day, while holding all other conditions constant, the results would be different. Elasticity, then, is a very weak foundation indeed upon which to erect any public policy. Nevertheless, this criticism seems to have effectively demoted free transportation as a highway congestion cleanser to a secondary role. Instead, upgrading the quality of mass transit has been urged in its place.[72]

Furthermore, although collection costs would be virtually eliminated, these costs themselves only amount to 8% of total operating expenses.[73]

Free-fares, moreover, are a denial of the price system. If there is no payment for riding, there can be said to be no price system in operation. Free fares, then, are undesirable in that they make it impossible to retain the usual benefits associated with prices. With free fares, there will be "no rational method of determining the proportion of national resources that should be spent,"[74] since it is through the price system that such allocations are made. Without fares, such allocation decisions will have to be arbitrary.

Moreover, since prices are the only reins through which consumers "control" producers, free fares will remove any vestige of this effect. Not compelled to earn profits, with their costs subsidized out of general tax revenues, the managers of the transit operations will find that their efficiency and responsibility will be eroded. Roth states: "Free fares fail to relate expenditures to the wishes of the consumers . . . and do nothing to insure that existing [stocks] are used in an efficient manner."[75]

Scheiner and Starling, however, would be disposed to argue with this contention. They ask:

> Would an open-ended federal subsidy become an invitation to inefficiency and excessive wage demands? Clearly, a carefully designed program would have to deal with this question. One possibility would be to have the federal government pay local communities a flat subsidy per passenger trip. This approach would provide a built-in incentive for transit systems to improve service since the more passengers it carries the more assistance it receives.[76]

This would indeed encourage the local community to provide service, but the quality of service encouraged would only be at that level necessary to tempt use *at a zero price.* And commuters who put up with rush hour crunches in some of our larger cities could be expected to continue use of free transit unless it deteriorated very seriously indeed. So there would be some incentive for quality service; but it would only become operational at levels where the service was practically non-existent.

Additionally, without prices there would be no way in which to gauge the *importance* that each rider places on his trip. With prices, we know that the customer places a higher value on the trip than the money he must pay in order to buy it. But with free fares, a person will not hesitate to use the service even for the most superficial and frivolous of reasons. People may use transportation just in order to get out of, and stay out of, the rain; for the purpose of having a place to stay; or for loitering. A group of derelicts could tie up transit service by utilizing it at peak hour times. And if the fare were free only at off peak times, this would seriously cut into the savings made by obviating the need for collection costs.

We must conclude this discussion of the free fare with the caveat that our rejection of the case in favor of this policy is only applicable to *public* mass transportation. As far as *private* mass transportation is concerned, the question is a completely open one. Notwithstanding the powerful arguments leveled against free public fares,[77] a private entrepreneur may well decide, as part of his profit-oriented plans, to give transit away "free" as part of a package deal. This is commonly done in department stores and office buildings, at least as far as internal transportation (elevators, escalators) are concerned. And amusement parks sometimes offer free train rides within their own premises. Given private ownership of all means of transportation, it is impossible to rule out all such behavior.

NOTES

1. A.A. Walters, *The Economics of Road User Charges*, World Bank Staff Occasional Papers #5, (Washington, D.C.: International Bank for Reconstruction and Development, 1968), p. 2.
2. *New York Post*, 19 January 1978, p. 3.
3. U.S. Bureau of the Census, *The Statistical Abstract of the U.S., 1976*, 97th ed., table 979.
4. *Ibid.*, table 986.
5. George M. Smerk, *Urban Transportation: The Federal Role* (Bloomington, Ind.: Indiana University Press, 1965), pp. 59–61.
6. James M. Buchanan, "The Pricing of Highway Services," *National Tax Journal* 5, no. 2 (June 1952): 106. See also Wilfred Owen, *The Metropolitan Transportation Problem* (Washington, D.C.: The Brookings Institution, 1956), pp. 80–85; G.J. Ponsonby, "The Problem of the Peak, with Special Reference to Road Passenger Transport," *The Economic Journal* (March 1958), p. 74; John W. Dyckman, "Transportation in Cities," in Arthur F. Schreiber, Paul K. Gatons, and Richard B. Clemmer, eds., *Economics of Urban Problems* (Boston: Houghton Mifflin Co., 1971), pp. 140–41; and Owen, *The Accessible City* (Washington, D.C.: The Brookings Institution, 1972), p. 37.
7. Smerk, *Urban Transportation*, p. 59.
8. Buchanan, "Pricing of Highway Services," p. 106.
9. Charles O. Meiburg, "An Economic Analysis of Highway Services," *Quarterly Journal of Economics* 77 (November 1963): 656. See also J.R. Meyer, J.F. Kain, and M. Wohl, *The Urban Transportation Problem* (Cambridge, Mass.: Harvard University Press, 1965), p. 340.
10. Edward C. Banfield, *The Unheavenly City* (Boston: Little, Brown & Co., 1970), p. 5.
11. *Ibid.*, p. 12.
12. This is not to mention the deterioration of *non*-inner city housing due to rent controls, the unemployment of *non*-inner city youth due to minimum-wage legislation, the problems of pollution in *non*-inner city areas caused by governmental failure to allow a full specification of property rights, and the intolerably high costs of medical attention for the *middle* class due to governmental restrictive licensing procedures for doctors. See Milton Friedman, *Capitalism and Freedom* (Chicago: University of Chicago Press, 1962), chap. 9. In none of these serious urban problems are the poorest classes involved causally—although they are ofttimes the greatest sufferers.
13. Robert L. Bish and Robert J. Kirk, *Economic Principles and Urban Problems* (Englewood Cliffs, N.J.: Prentice-Hall, 1974), pp. 138–39.
14. James Q. Wilson, "Urban Problems in Perspective," in James Q. Wilson, ed., *The Metropolitan Enigma* (Garden City, N.Y.: Doubleday and Co., 1970), p. 393.
15. John R. Meyer, "Urban Transportation," in Wilson, *Metropolitan Enigma*, p. 52–53.
16. Banfield, *Unheavenly City*, p. 10.
17. Robert F. Baker, *The Highway Risk Problem* (New York: John Wiley and Sons, 1971), p. 2.
18. Martin Wohl, "Must Something Be Done About Traffic Congestion?", *Traffic Quarterly* (July 1971), pp. 403–404.
19. Wilbur R. Thompson, *A Preface to Urban Economics* (Baltimore, Md.: The Johns Hopkins Press, 1968), p. 333.
20. There are, to be sure, *some* choices open to the public. Bond issues to raise money to build turnpikes, the choice of whether to utilize a quicker toll road or to make use of the local roads—replete with traffic lights—for free, are examples. But the first type (political choice) has serious drawbacks as compared to market choices; and the toll road choice has usually been made in *favor* of avoiding congestion by paying for the privilege—in direct contradiction to the allegations made by the advocates of the status quo. For a discussion of how a free-market, privately owned road system might function, see Murray N. Rothbard, *For a New Liberty* (New York: Collier, 1978), chap. 11; and "Free Market Transportation: Denationalizing the Roads" by the present author, in *The Journal of Libertarian Studies* 3, no. 2 (Summer 1979).

21. See Smerk, *Urban Transportation*, p. 200; Owen *Metropolitan Transportation Problem*, pp. 245–48; Robert A. Olmsted, "Response to [William Vickrey's] 'Improving New York's Transit Service—An Economist's View,' " *City Almanac* 8, (April 1974): 11; Thompson, *Preface to Urban Economics*, p. 354; James C. Plewes and Maurice H. Yeates, "The Urban Rush Hour: An Analysis of the Yonge Street, Toronto Subway System," *Traffic Quarterly* 26 (April 1972): 218; Wohl, "Must Something Be Done," p. 404; and David M. Winch, *The Economics of Highway Planning* (Toronto: University of Toronto Press, 1963), p. 80.
22. Plewes and Yeates, "The Urban Rush Hour," p. 218.
23. See Smerk, *Urban Transportation*, p. 194; and William Lathrop, Jr., "Reversible Roadway Controls," *Traffic Quarterly* (January 1972), p. 133.
24. As can be expected from our analysis of the differential incentives involved in government and private enterprise, it was the *latter* that first initiated this response to differential customer desires, and which continues in the forefront of consumer satisfaction. In contrast, the response of governmental agencies has been to prohibit smoking, thus satisfying one segment completely at the expense of the other.
25. John F. Kain, "A Re-appraisal of Metropolitan Transportation Planning," in Schreiber, Gatons, and Clemmer, *Economics of Urban Problems*, p. 163. See also Owen, *The Accessible City*, p. 31; Charles M. Noble, "Highway Design and Construction Related to Traffic Operations and Safety," *Traffic Quarterly* (November 1971); and S.S. Morris, "Freeways and the Urban Traffic Problem," *Traffic Quarterly* 27 (October 1973): 523.
26. Bish, *Economic Principles*, p. 147.
27. The express bus lane idea is dealt with separately below.
28. Owen, *The Accessible City*, pp. 43–44.
29. *Ibid.*, pp. 48–49. See also Wohl, "Must Something Be Done," where he advocates the reduction of employment density.
30. Owen, *The Accessible City*, pp. 50–51.
31. *Ibid.*, p. 54. See also Smerk, *Urban Transportation*, pp. 179, 203, where he advocates a new towns policy.
32. With the honorable exception of Houston, Texas. See Bernard Siegan, *Land Use Without Zoning* (Toronto: D.C. Heath and Co., 1972). See also *Zoning: Its Costs and Relevance for the 1980s*, edited by the present author (Vancouver: Fraser Institute, 1980).
33. See Rothbard, *For a New Liberty*, p. 197.
34. See the section below on banning automobiles.
35. See the three chapters on the "socialist calculation debate" in F.A. Hayek, *Individualism and Economic Order* (Chicago: Henry Regnery, 1948), pp. 119–208.
36. Buchanan, "Pricing of Highway Services," p. 97. See also Smerk, *Urban Transportation*, p. 179; and Norman L. Cooper, *Urban Transportation: An Answer* (Bloomington, Ind.: Bureau of Business Research, Indiana University, 1971), pp. 1, 15.
37. Herbert Mohring, "Urban Highway Investments," in Robert Dorfman, ed., *Measuring Benefits of Government Investments* (Washington, D.C.: The Brookings Institution, 1965), p. 248.
38. O.H. Brownlee and Walter W. Heller, "Highway Development and Financing," *American Economic Review* 46 (May 1956): 235.
39. Wohl, "Must Something Be Done," pp. 407–408.
40. Morris, "Freeways and Urban Traffic," p. 523.
41. Dyckman, "Transportation in Cities," p. 143. See also Owen, *Metropolitan Transportation Problem*, p. 109.
42. Bish, *Economic Principles*, p. 139. See also Anthony Downs, *Urban Problems and Prospects* (Chicago: Markham Publishing Co., 1970), p. 176; and William Vickrey, "Maximum Output or Maximum Welfare? More on the Off-Peak Pricing Problem," *Kyklos* 24 (1971): 305; Thompson, *Preface to Urban Problems*, p. 334; Meiburg, "Analysis of Highway Services," pp. 648, 653; Wohl, "Must Something Be Done," p. 406; and Sam Yagar, "Potential Demand Response to Improved Roadway Service," *Traffic Quarterly* (January 1973), p. 133. Gabriel Roth, *Paying for Roads* (Baltimore, Md.: Penguin Books, 1967) objects as follows: "It is doubtful whether cities as we know them today could ever be

designed to accommodate all the vehicles that would appear if free uncongested roads were made available to them" (p. 15).

43. Such prohibition would, of course, be inconsistent with a pure free-market system.
44. Smerk, *Urban Transportation*, p. 198, favors the exclusion of automobiles from highly congested areas. See also Wohl, "Must Something Be Done," p. 405. William J. Baumol in his "Urban Services: Interactions of Public and Private Decisions," in Howard G. Schaller, ed., *Public Expenditure Decisions in the Urban Community* (Baltimore, Md.: Johns Hopkins Press, 1963), justifies such extremely radical measures as "the complete banning of privately owned passenger cars from downtown streets to cope with the traffic problem," on the ground that the traffic equilibrium effect has prevented the additional building of highways from solving the problem: "Freeways seem frequently to have turned out to be obsolete before they were completed," (p. 15).
45. See Kain, "Re-appraisal of Transportation Planning," p. 160, where he states: "If we limit our consideration to peak hour passenger travel, there is no doubt that buses use much less street space per passenger than private automobiles at each possible speed of roadway operation. *Assuming that the benefits from making a particular trip at a particular time and from travel time savings are not too dissimilar between car and bus passengers,* the total benefits resulting from a given reduction of bus travel time are much greater than those resulting from a comparable reduction in the travel time for a single automobile traveling during peak hour" (emphasis added). True enough, based on this assumption, but the assumption is completely unjustified! No evidence is given in its behalf and indeed, the presumption should be the exact opposite: automobile riders have higher incomes, and hence higher alternative costs of time, than bus passengers.
46. Vickrey, "Maximum Output," p. 305. See also Meyer, "Urban Transportation," p. 66, who objects to "physical controls" on the ground that "they will not differentiate . . . between different classes of user and the intensity of different groups' desire to use urban highways." See also, with regard to the heterogeneity criticism, Harold W. Torgerson, "Comment [on Brownlee and Heller]," *American Economic Review* 46 (May 1956): 262, wherein it is argued that highway monies ought to be allocated on the basis of necessarily homogeneous "traffic counts"; Schreiber, Gatons and Clemmer, *Economics of Urban Problems: An Introduction* (Boston: Houghton Mifflin Co., 1971), p. 93, also errs in making use of "homogeneous service units . . . in comparing modes of transportation." An author who takes account of the non-homogeneity phenomena is Winch, *Economics of Highway Planning*, p. 21.
47. Thompson, *Preface to Urban Economics*, p. 350.
48. Roth, *Paying for Roads*, p. 70–71.
49. *Ibid.*, pp. 71–72. Although clearly on the right track, there are some difficulties even with this eloquent plea in behalf of prices and against permit restraint. First, there is no known or even *possible* way to measure intensity, by a price system or by any other system. Intensity is basically a subjective and unmeasurable phenomena. Given the inadmissibility of cardinal utility measurements to the bar of economic theorizing—cf. Rothbard, *Reconstruction of Utility and Welfare Economics* (New York: Center for Libertarian Studies, 1978)—the quest for a measurable "intensity" is a will-o'-the-wisp. But in economics, it is not *necessary* to be able to measure the intensity of road use in order to make welfare judgments. Given a price system, where some motorists choose to patronize the road at a given price and others do not, we may still conclude that utility is being maximized in that the two partners to the trade, the road owner and the customer who chooses to patronize his establishment, both gain in the *ex ante* sense, or else they would not have agreed to the trade. The price system will, and restraint by permit will not, sift out those who are unable or unwilling to pay the congestion premium for road use.

    On the second point, flexibility, it appears that a system of restraints could, with dint of effort, be operated so as to permit the widest use of empty roads and only inhibit the utilization of crowded roads. As to the third point, simplicity, fairness, cheapness and enforceability, there seems little to choose between the two systems. A price system will undoubtedly be cheaper, but, at least in the minds of most of the public, a permit system will be far simpler to understand. Enforceability will depend entirely upon the efforts made

by the authority whose job it is to uphold the law—given equal public acceptance; and on fairness, we are convinced that *any* mutually agreeable contract between two consenting adults is "fair."

Nevertheless, we can go along with Roth to the extent of saying that we, too, might *predict* that under private enterprise the market might well lead the road owners, as if "by an invisible hand," to *choose* prices over permits. But we refuse to enter into the assumptions implicitly held by Roth: that the government will of necessity have to make the choice, and that the economists' job is to advise it on the "best" procedures.

50. Owen, *The Accessible City*, pp. 1, 4.
51. *The Economist*, 30 November 1963, p. 912.
52. Owen actually speaks of a "spreading automotive *invasion*," (*The Accessible City*, p. 19). (Emphasis added)
53. As for the claim that "cars kill 50,000 people per year in the U.S.," there is not *one* case on record where a completely unmanned automobile injured a person, except in the fictional movie, "The Car."
54. Owen, *The Accessible City*, p. 21.
55. Roth objects to banning because "restrictions of the kind required are unacceptable on the grounds that they conflict with freedom of choice," (*Paying for Roads*, p. 15). This may make good sense in an era of government ownership of the roads, but under a system of private enterprise, the right to restrict entry to one's own property is the linchpin of the entire system.
56. See Owen, *The Accessible City*, p. 32; Noble, "Highway Design and Construction," p. 547; Peter L. Watson and Edward P. Holland, "Study of Traffic Restraints in Singapore," *World Bank Staff Occasional Papers*, (Washington, D.C.: International Bank for Reconstruction and Development), p. 21; Smerk, *Urban Transportation*, p. 194; and Owen, *Metropolitan Transportation Problem*, p. 122.
57. See Bish, *Economic Principles*, p. 146.
58. See Roth, *Paying for Roads*, p. 89; "The Changing Challenge," *General Motors Quarterly* (Spring 1974), p. 28; Vickrey, "Pricing and Resource Allocation in Transportation and Public Utilities: Pricing in Urban and Suburban Transport," *American Economic Review* (May 1963), p. 461.
59. See John R. Meyer, "Knocking Down the Straw Men," in Benjamin Chinitz, ed., *City and Suburb* (Englewood Cliffs, N.J.: Prentice-Hall, 1964), p. 91-92.
60. John Kain calls for the Department of Transportation to conduct the study. See "Reappraisal of Transportation Planning," p. 166.
61. See the discussion of the Diamond Lanes experiment—which was later abandoned—to reserve freeway lanes for buses and car pools in Los Angeles. *California Journal* (January 1978), p. 20.
62. See Wohl, "Must Something Be Done," pp. 405, 408; and Schreiber, Gatons and Clemmer, *Economics of Urban Problems: An Introduction*, p. 86.
63. See Vukan R. Vuchic, "Skip-Stop Operation as a Method for Transit Speed Increase," *Traffic Quarterly* 27 (April 1973): 307; Vickrey, *Monograph #10* (New York: Mayor's Committee on Management Survey, n.d. [approximately 1952]), concerning New York City; Vickrey, "Improving New York's Transit Service—An Economist's View," *City Almanac* 8 (April 1974): 1-10; and Olmstead, "Response to Vickrey."
64. Owen, *The Accessible City*, p. 24; and *idem.*, *Metropolitan Transportation Problem*, p. 122.
65. See John B. Rae, "The Mythology of Urban Transportation," *Traffic Quarterly* (January 1972), p. 88. See also Barry Bruce-Briggs, *The War Against the Automobile* (New York: Dutton, 1978).
66. Thompson, *Preface to Urban Economics*, p. 359.
67. See L. L. Waters, "Free Transit: A Way Out of Traffic Jams," *Business Horizons* (Spring 1959), pp. 104-109. Hayek also advocates what are, in essence, "free fares" for highway use: "There are some kinds of services, such as. . . roads, which once they are provided, are normally sufficient for all who want to use them. The provision of such services has long been a recognized field of public effort, and the right to share in them is an important part

of the protected sphere of the individual. We need only remember the role that the assured 'access to the King's highway' has played in history to see how important such rights may be for individual liberty." Hayek, *The Constitution of Liberty* (Chicago: Henry Regnery Co., 1960), p. 141. According to Meyer, Kain and Wohl, *Urban Transportation Problem*, p. 340: "The American public seems to feel that highways should be 'free'—that is, have tolls extracted in the form of fuel and other excise taxes."

68. James I. Scheiner and Grover Starling, "The Political Economy of Free-Fare Transit," *Urban Affairs Quarterly* (December 1974), p. 179. The authors claim also, in behalf of free fares, aid for urban renewal, full employment, relief of poverty.
69. Owen, *The Accessible City*, p. 47. Another reason for the exact fare is to reduce robbery of the bus driver's cash, since fares can go directly into a locked box which the driver cannot open.
70. *Ibid.*, p. 175–76. For a description of the Toledo experiment, see Owen, *Metropolitan Transportation Problem*, p. 121.
71. Smerk, "Subsidies for Urban Mass Transportation," *Land Economics* 41 (February 1965): 65. Scheiner and Starling cite elasticities of 1.34 for Denver and 1.90 for San Diego ("Political Economy of Free-Fare Transit," p. 175–76). Gerald Kraft and Thomas A. Domencich cited a study by the Charles River Associates to the effect that "free transit might divert 13.8% of the trips to work from auto to public transit, but few or no shopping trips by auto." See Kraft and Domencich, "Free Transit," presented at the Transportation and Poverty Conference, mimeographed (Brookline, Mass.: American Academy of Arts and Sciences, 1968). (Cited in Lewis M. Schneider, "The Fallacy of Free Transportation," *Harvard Business Review* 47 (January-February 1969): 84.
72. See Smerk, *Urban Transportation*, p. 231.
73. See Vickrey, "The revision of the rapid transit fare structure in the City of New York," *Technical Monograph #3* (New York: Mayor's Committee on Management Survey, 1952).
74. See Roth, *Paying for Roads*, p. 18, for this and other criticisms of unpriced road use.
75. *Ibid.* Schneider writes: "There would be no quantitative measure other than 'public benefits' or 'last year's budget' by which to judge the performance of the system," ("Fallacy of Free Transportation," p. 86).
76. Scheiner and Starling, "Political Economy of Free-Fare Transit," p. 177.
77. Note also that in rejecting free fares, one need not embrace the seeming alternative, paid public fares. And that is because there is still a third alternative: the *abolition* of public transit.