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The Public Health Service is to be congratulated for its timely initiative on the problem of air pollution control. The diversity of interests represented at this Conference suggests that something like the historic moment has at last arrived when the job of decontaminating our atmosphere is to be taken seriously.

The Department of Commerce is pleased to be represented here, and will continue to give fullest support to this program.

I have followed these discussions on air pollution with a growing sense of urgency. There is obviously much work to be done by us all, without delay.

Basically, we are confronted by a technical challenge, a lethal side-effect to be mastered by our scientists, engineers and industrial technicians. Realistically, however, none of these experts can hope to prevail until the political engine gets up enough steam.

Since I cannot shed any professional light on this subject, I assume that my role here is to add a little heat.

If the truth be known, we are all here as a result of progress. For, as Chesterton reminds us, "Progress is the mother of problems."

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In considering the very serious problem at hand, I think we should have the grace to acknowledge one essential fact. Air pollution arises from the things which all of us--in the past, at least--have accounted as blessings.

I refer to the general prosperity of our Nation. To its advanced technology. To the increasing health and size of our families. To social mobility which permits most of our citizens to live wherever they can afford to. And certainly not last in importance, I refer to our freedom of personal choice in the marketplace.

Withdraw just a few of these circumstances and it's quite possible that American cities would not be suffering from the particular blight that concerns us today.

Air pollution is a subject that presses the emotional button almost like the public abhorrence of chemical warfare. It would, I believe, be most unfortunate if the highest standards of objective inquiry were not maintained between the principal parties in this vital domestic dialogue. Now that natural forces have helped to dramatize the air pollution peril on a regional scale, and citizens are aroused on the East as well as the West Coast, there is need for utmost precision in health standards and in safety margins that can absorb meteorological vagaries.

Our society also should be exceedingly careful about the new restraints and responsibilities, the added economic burdens, which it imposes on industry.

Smokestacks and tailpipes have only very recently discovered that they were serious malefactors. For a very long time before that they were hailed as society's benefactors. There is quite an adjustment to be made. Let it be made in an orderly way.

Some of our industrial progress, it now appears, was illusory. As a result, some of the profits of industry have also become illusory.

The gains achieved at the expense of the community's health and safety were not gains at all. And the profits arising from such dubious advances must now be spent on remedies in the public interest.

This is industry's inescapable obligation.

But while insisting that the smokestack and the tailpipe assume their full social responsibilities, the community at large should also be aware that its way of life may be changed very dramatically if it demands the unreasonable or the impossible.

We should never forget that some of the cleanest air in the United States can be found in ghost towns.

At every stage of this decontamination program, we ought to be weighing the economic consequences alongside the health implications. Air pollution beyond a certain level is injurious to the family. But

so, in its own way, is unemployment.

Our problem in some industries, in some localities, is to find an acceptable balance--to eliminate obnoxious side-effects while holding on to the jobs that support a community.

Over the long run, punitive legislation and scare tactics will not produce the desired result. I personally feel that the experts in air pollution need to be much more positive, much more educational in their approach. They have an obligation to present the issue in terms that will advance our total civilization rather than inhibit progress.

For example, common sense tells us that air pollution, of the man-made variety, is mainly produced by the liberation of energy - the inefficient or incomplete release of energy. Naturally, the largest amounts of energy are being released in and around the great cities.

The imposition of controls to reduce contamination of city air is a negative goal. It may be the only measure we are able to implement at this time but it is certainly not the best long-range approach. The positive goal, that I would wish to see the authorities on this subject emphasize more than they do, is the need for a far more efficient harnessing of the energy sources actually or potentially at our disposal. In that process we should of course insist on minimization of byproducts of the type under discussion in this and other panels of the Conference.

The relative efficiency of engines and heat and power plants in industrial and home use is obviously not my specialty. I am, however, aware that the processing and combustion of fossil fuel are the principal sources of air pollution in our cities. I am also well aware that the industry with which I am intimately concerned - the transportation industry - moves on fossil fuel. Let me dwell for just a moment on the implications.

We all know that the internal combustion engine is a great air polluter and a great waster of energy. So I raise this public policy question: Should the Nation's ingenuity and resources go primarily towards the muzzling of automobiles or should they be focused on R&D for a more efficient car engine?

Either way, the cost will be enormous.

A report just issued by President Johnson's Interdepartmental Energy Study Group suggests that air pollution control will cost each owner of a conventional automobile about seven cents per gallon of gasoline. Projecting this on the basis of annual fuel consumption for the average passenger car, the figure is approximately \$46 per car per year. In other words, for the Nation as a whole, the cost of an 80 percent effective exhaust-hydrocarbon control for private automobiles alone may be upwards of \$3.5 billion annually.

Within the transportation sector, as you know, there are a lot of other things besides the family car. What the added cost of air pollution control would be for the Nation's trucks, buses, boats, locomotives and aircraft, no one is yet in a position to estimate. As a very conservative guess, I believe it could be equal to that of the combined automobile fleet.

If such is the case, then the price tag for comprehensive air pollution control of the transportation industry may be about \$7 billion annually.

That would be two billion dollars more than the present yearly budget of our space program.

If we can contemplate an expenditure of that magnitude to control just a portion of the contamination of our atmosphere, I think we should consider some of the alternatives to control.

Probably if we were willing to invest the entire \$7 billion a year in transport research we would shortly find a way to nullify gravity itself! Or even achieve some form of teleportation.

With a fraction of that sum, however, your government might well collaborate with private industry in the development of a small propulsion unit to meet the new set of specifications imposed by the densities of urban life. Whether that would be an electric or plasma engine, or even an amazingly improved internal combustion system, is a matter of speculation.

But given the specifications, and the political and economic necessity, I have absolute confidence in America's transportation industry, and its ability to provide what is needed.

In the interim, let us not become so determined on ends that we grow indiscriminate in our means. I have in mind such double-edged measures as restricting automobile access to the CBD. This two-in-one solution to both the pollution and traffic congestion problems has been seriously proposed by people who feel very deeply concerned about the future of the central city. They reason that most drivers are captives to their jobs in the heart of town and that, whether they like it or not, the suburbanites would be obliged to commute via public transit.

Personally, I wouldn't mind seeing that idea tried out in some metropolis, so that we could all be spared the repetition of that argument and perhaps arrive at generalizable data. Unfortunately, most discussion about urban mass transportation seem to get along without facts like anaerobic bacteria get along without oxygen.

The fact is that in national terms urban transit is a declining industry. It is declining absolutely in cities of under 500,000 population. It is declining relatively in the larger cities.

Urban mass transit represents a gross investment of approximately \$4-1/4 billion. It would be a tragedy to see that investment dwindle and go down the drain. For great as the economic loss might be, the social loss would be incalculable.

And yet, ironically, I feel that many American cities, large and small, are helping to destroy transit by the way in which they habitually think of transit. They are helping to foreclose its future by assigning it unreasonable and impossible tasks.

Above all, our cities must first decide what urban mass transportation really is.

Shall we look upon transit as an instrument for equal opportunity?

Shall we regard it as a service to commerce and industry, in other words, a cost of doing business?

Or again, should we perhaps view transit as one of the fixed costs of living in a city?

The cities of America have to decide this question. It is not an abstract, philosophical question. For the answer has a direct bearing on decisions as to who shall pay for this service and in what way.

If, for example, a community should decide that public transit is a cost of doing business, then perhaps public transit should be free, as the elevators in a building are free. In this case, the expenses might be met by an annual levy on non-residential real estate.

Or, to follow this line of thought a little further, let us say that a community decides that it wants public transit to serve as a social equalizer. A simple illustration. The Watts area of Los Angeles, I am told, has very poor public transportation to the major employment areas of the city. Some researchers found that the one-way trip from home to a job in those areas would usually take one and a half hours via a succession of buses. According to this study, published in Christianity and Crisis, unless a person had a car, which a lot of poor people don't have, there was physically no way to get from Watts to one of the major employment areas by the start of the work day.

Now, just for sake of argument, let us say that the white inhabitants of Los Angeles were willing to subsidize the population of Watts. They might, in such a case, provide some express bus routes at below cost so that the fares could be very low.

Allow me to say that this view of urban transit as a social equalizer is by no means irrelevant to the future of cities. As you know, Negroes now comprise the backbone of the slums in most of America's central cities. One marketing consultant estimates that by 1970 Negroes will represent close to fifty percent of the population of such cities as Baltimore, Detroit, New Orleans and St. Louis.

Meanwhile, more and more industry has been moving to the outer edges and suburbs of the city. How will those people get to those jobs?

If problems such as this one must be dealt with by transit people, after the fact, then I believe that transit is indeed being destroyed by a habit of thought.

Our urgent necessity is to begin thinking about urban mass trans-

portation in such a way as to make a difference in eventual outcomes.

It would be folly to create the new and wonderful urban transport facilities that are within our technical capacities if, in the end, people choose not to live or work in central cities.

We have to get to the soul of this subject. We have to find out what people really want and what people will really use and what people are really willing to invest in with their tax dollars. In the future, I suspect, urban travel consumption patterns will vary a great deal more than they now do, from city to city.

I say this hopefully, out of deep respect for the individuality of most large cities, which I would not only like to see preserved but reflected in the transportation policy decisions made by those cities. Consider the variety.

There are cities dominated by a single industry, like Detroit. There are cities with very diversified industry, like Chicago. There are ocean port cities, like New York. There are governmental cities like St Paul and Albany. There are health and retirement centers like Miami. There are cities with major museum functions, like New Orleans and Washington, D. C. There are religious communities, like Salt Lake City. There are cities of the plains, like Omaha, cities of the mountain, like Denver, river towns like St. Louis and Memphis. There are colonial towns like Philadelphia and amorphous cities like Los Angeles.

You cannot tell me that these special characteristics will disappear in twenty or thirty years, and that a single transportation scheme will fit all of them. The more I examine urban mass transportation problems in this metropolis and that metropolis, the more convinced I become that there are no standardized solutions.

A city adapted to landscape limitations, as Pittsburgh, for example, may continue to use existing trolleys for decades, simply because the town is built in valleys favoring radial residential patterns. A San Francisco may continue to use cable cars into the indefinite future because they do work on steep hills and they have a high sentimental value. A New York may stand pat on its subways, because you might as well think of Manhattan as one colossal building with its elevators running horizontally.

Then, let us think of the new cities that are yet to be built in this country. These could be planted in the wide open plains and grow to half a million population in ten years if some new economic basis were to be discovered. Or they could be the new, totally planned communities that are put into orbit around a central city. Or they could be partially below ground cities around major airports such as Dulles. Obviously, when you build a community from scratch, there are opportunities to create new transportation patterns, such as pedestrian towns, or compact, self-contained skyscraper cities. I think it is likely that the new satellite towns of the future will adopt many different strategies to minimize congestion problems of commuters. I wish them all well, and I think they should always be able to come to the appropriate Federal agencies for technical assistance, and planning grants and loans. I only hope, when that happens, that we in the bureaucracy will have the guts to encourage

those new approaches.

Abstractly the basic reality of transportation is that it is a derived function. And the basic fact of an urban environment is that it is a calculus of rapidly changing relationships. When you combine the two formulas, you discover that urban transportation is affected by more factors than it can ever hope to influence.

A zoning decision, for example, in a small satellite town may do more to alter the pattern of metropolitan travel than a multi-million dollar investment in new transit equipment. A slight adjustment in U.S. farm policy can drastically alter the characteristics of a city's labor pool, along with its transportation requirements. The adoption of a local payroll tax or a sizable reduction in property assessments might, in a short time, change the volume and direction of rush-hour traffic.

It seems to me that antibiotics and racial prejudice and FHA loans and birth control pills can make as tangible a contribution to urban mass transportation as geography, technology, or eminent domain.

That contribution may be largely unpredictable and uncontrollable but not entirely so. It poses an immensely complicated problem, demanding not intelligence alone but patience as well, and subtlety and flexibility. Qualities that are not always joined with entrepreneurial skill and civic patriotism. Yet any city's long-range transportation planning which ignores these social factors, or gives them insufficient weight, will be at their mercy.

I have a strong feeling that we are all, to some extent, prisoners of our own rhetoric in this matter. We seem to be debating this problem in an immature fashion, without historical perspective. I think now of Cicero's remark that "He who is ignorant of what happened before his birth is always a child".

That practical Roman was alluding to the state of anxiety and ineffectiveness of people required to make choices from an unfamiliar set of alternatives. That phrase he uses, "ignorant of what happened before", does not, I believe, simply mean "ignorant of important names and dates of the past". It refers to people who are unacquainted with man's previous experience in analogous situations, who have no knowledge of responses made earlier to similar questions, nor of what resulted.

If any lesson should have been learned about urban transportation in the past seventy-five years, it is the need for systems having the greatest possible flexibility. Yet some groups are still proposing to install rail rapid transit which is the least flexible of all systems, in cities lacking the population densities required for economic feasibility. And often the proposed route is over an abandoned railroad right-of-way, as though the abandonment had no significance whatsoever.

I think many of you here today must share my own feeling of annoyance at the way in which many discussions on urban mass transportation are framed. We are asked to pretend that all of our mobility problems are newly acquired and without precedent.

That really isn't so.

I have been browsing in some of the old transit literature in our library, going back to the turn of the century. And it seems to me most of our major cities have been complaining about traffic congestion throughout the periods of their greatest growth and prosperity.

For example, in 1902, which was a decade before the automobile came into general use, Chicago hired an engineering consultant

"to devise some method of operation which will relieve the congestion of the over-crowded thoroughfares in the central portion, or business district, of the city..."

And that expert advised that nothing could be accomplished unless team traffic was stringently regulated.

In the city of New York, in 1903, the Merchants' Association was bemoaning the transportation crisis in Manhattan. It blamed the congestion on the horse and buggy. It denounced carriages standing at curbs, trucks delivering to the front of buildings, street repairing during the daytime, crosstown traffic, and teamsters in general. These merchants predicted there would never be a time, under the most ideal circumstances, when streetcars could move past a given point on Broadway faster than "an average speed of eight miles per hour during rush hours." How right they were.

Ten years later, a similar congestion of the civic core reached the threshold of pain in the city of San Francisco. An engineering report, date 1913, tells us that "congestion in the business district reduces (transit) speed to as low as 2-1/2 or 3 miles per hour.

In 1919, the Philadelphia transit people were deploring rush-hour conditions on Market Street. In 1924, Cleveland announced that traffic congestion was "the most extensive present menace to the growth and prosperity of the city." In 1931, Detroit's consulting engineer told the city fathers: "Congestion of surface traffic in downtown streets . . . makes it impossible to provide fast schedules on any lines of the system".

Finally, I looked at a WPA-funded report on a West Coast city, in 1939, which states: "Obstruction to free movement of both public and private means of transportation increases as the central district is approached". That city went on to double its population in the next two decades. Los Angeles, of course.

So, there is a long history to this complaint that congestion is killing the core city, a history that didn't originally have much to do with the automobile.

Today, some of the civic cores have indeed atrophied almost to a point of no return. But I, for one, really wonder if congestion was the primary cause. If congestion could now be eliminated, would it reverse the process of decay?

For if some form of traffic congestion was present through all the past decades of economic growth, how can it now be thought of as the cause of a declining CBD?

History seems to illustrate one universal feature of cities: They always arise at transportation termination points. In a sense, then, the city's growth has been a capitalization of transportation delay.

It can even be argued that traffic congestion is actually the health of cities. For example, in a crowded department store, you can always find a certain number of customers dissatisfied with the service. But a crowded store has no worries about going out of business.

On the other hand, a store that asphyxiated its customers would have a doubtful future indeed.