



DEPARTMENT OF TRANSPORTATION

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REMARKS PREPARED FOR DELIVERY BY SECRETARY
OF TRANSPORTATION, JOHN A. VOLPE, AT THE
ANNUAL MEETING OF THE AMERICAN SOCIETY OF
MECHANICAL ENGINEERS, MEMBERS AND STUDENTS,
BALTIMORE HOTEL, LOS ANGELES, CALIFORNIA,
THURSDAY, NOVEMBER 19, 1969.

It is a great privilege for me to be here to deliver the
Roy Wright Lecture for 1969.

As a former builder and contractor I am always a little
nostalgic about meeting with honored friends in an allied pro-
fession. I say "honored" with all deliberation. The occasion
of this lecture should serve to remind us that engineering has
completely reshaped American life in the last half century.

Your 50th President, Roy Wright, saw the social signifi-
cance of engineering in a day when most people thought of the
profession in strictly technical terms. He urged engineers to
participate in public affairs. He knew they had the ability
and the obligation to do so -- not only as technicians, inven-
tors and scientists, but as informed citizens, too.

Today the stakes are even higher. The pace of change has
quickenened -- all around us we see technical breakthroughs,
rising incomes, expanding education, new opportunity and longer
life. Mechanical engineers have played a big part in these
historic advances.

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The great problem is that too much time is still lost between the development and the broad social application of your discoveries. You must help us find a way to apply engineering sophistication to social problems. Just take a quick look at where we are going:

- Our population is increasing by 180 thousand souls every month.
- our metropolitan areas are doubling in population every generation.
- The income gap between the middle classes and the poor keeps widening in absolute dollars.
- Our educational system struggles to keep up with new knowledge.
- Many of our young people are in a dangerous state of revolt against established morality.
- The air, the land, the waters of America are polluted and defiled.
- Our housing deficit continues to mount up.
- Our transportation network daily grows more congested.

So engineers today, especially you younger ones, will have no lack of opportunity. We have enough problems in this country to keep an army of engineers and other professionals working for many generations to come. We need not only your technical expertise, but your social commitment if we are to create a just and enjoyable society.

Let's take a look at the prospects in just one area -- transportation -- the one I am most familiar with. The facts are staggering. We are adding some 300 thousand new vehicles to our highways every month. Domestic airlines have doubled passenger miles in the last four years and will triple them by 1980.

The railroads are approaching a new era of automation and they are increasing operations by 15 million ton-miles every 24 hours. The same thing is true in trucking, the inland waterways, pipelines and in Maritime trade.

The demand for transportation services is so great that it is far outstripping population growth and most other forms of economic activity. The fact is, we must double the capacity of our transportation network within the next 20 years.

Our fabled transportation network is the best in the world yet it's out of balance, poorly integrated and in places dangerously unsafe. The day of patch and paste, chewing gum and bailing wire is long gone. We must aim for something new.

I believe it is to his great credit as a statesman that President Nixon early recognized this fact and was prepared to do something about it. When the President appointed me to his cabinet eleven months ago, his first request -- it was more like an order -- was that our Department formulate a long-range, top-to-bottom plan for the development of an overall national transportation policy.

This well-planned, fact-oriented, pragmatic approach is characteristic of the President. He sees a problem and his instinct is to approach it in a steadfast, unemotional manner. The President is patiently seeking a just peace -- a lasting, honorable peace -- in Vietnam.

He wants to reform the draft. He has asked for a complete overhaul of the welfare system. He is pushing for a far-reaching revision of the tax code. He wants to share revenue with the States. He is determined to take the Post Office out of politics. He seeks reform in manpower training, poverty programs, social security and crime control. So this is an active, practical, reform-minded Administration.

I must confess, however, that the area that concerns me the most right now is transportation. We have accepted President Nixon's assignment and are working urgently on that master plan I mentioned. It covers all modes and recognizes the inevitability of intermodal cooperation. It anticipates a big role for new technology. It will propose new interfaces and new techniques to transfer people and freight easily from one mode to another without aggravating delays.

Beyond such obvious improvements, however, we are convinced that the transportation system of tomorrow must do a great deal more than just shift boxes and bodies around the Nation. It must fulfill a host of social expectations. The S-S-T is a case in point. This plane will mean another entire generation of aviation supremacy for the United States. It will be a great dollar earner overseas. It will bring many tourists and businessmen to our shores where they will spend and invest their money.

If Congress approves President Nixon's request, the first S-S-T will be available for commercial airlines about 1977 or 1978. After that, every single plane we can produce for the first 5 to 7 years will be absorbed by the overseas market, and by the end of that time we will have a technical answer to the sonic boom problem.

We have asked the University of Tennessee to study completely new ways of suppressing the sonic boom, including unconventional design for engines and lifting surfaces, and new exhaust configurations. Even so, whenever an S-S-T flies at subsonic speed as it approaches airports, it will generate considerably less noise than present aircraft.

I hear some people out in Boron, California -- out by Edwards Air Force Base -- even like the sonic boom and use it to promote tourism -- "The boom town of the Nation," they call it. Well, despite that, you engineers must help to find the solution.

And I hope you will give your all to the development of the whole new series of planes we will need over the next 10 to 15 years if our air industry is to maintain its international leadership. I'm proud that the aerospace industry has been such a good dollar earner in the last 20 years and has contributed so many technological advances now being spun off to the benefit of civilian markets.

But there are some problems so serious that we cannot wait for completed master plans, for marvelous technical breakthroughs or even for the end of the Vietnam War. We have submitted a bill to Congress in each of the three modes where action must be taken now:

We have sent up an Airfield/Airways Bill that will pour ten billion dollars into new airports and improved navigation and landing aids for our overloaded airways. This bill sailed through the House two weeks ago on a vote of 337 to 6. That was an outstanding bi-partisan vote. A very similar bill has been favorably reported out of Committee on the Senate side.

We have sent up a Railroad Safety Bill that would give us the power to set tough standards for rolling stock, tracks, roadbeds, signal systems and employee qualifications. We need this bill because derailments have risen about 100 percent in the last 7 years. Train wrecks involving explosive or poisonous chemicals have threatened too many communities across the land.

We have requested that Congress pass a \$10 billion Public Transportation Bill that would revitalize entire urban regions and ensure the urban mobility we must have but cannot achieve with cars alone.

The Public Transportation Bill could do more to restore and revitalize urban America than any other piece of legislation in the last 20 years. It includes \$500 million for research and development in transportation systems. We need the same kind of deep-probing, far-ranging research in public transportation as we have poured into space travel.

And I can't tell you how delighted I am that the aerospace and engineering research companies are starting to ask us how they can get in on the action. Some are already into the action in a big way. Rohr Company, for example, an aerospace manufacturer, got the contract to build the rapid transit cars for the Bart system in San Francisco. Grumman is heavily committed to the tracked air-cushion vehicle concept, which has more immediate promise than any other new device.

Garrett Airresearch will unveil their TAC/V here in Los Angeles on December 9th. United Aircraft built our Turbo-Train which runs from Boston to New York City.

There are others, of course, such as Tube Transit Corporation, up in Palo Alto, where they are working on a project that may, someday, move vehicles through hermetically sealed tubes using gravity and pneumatic pressure for propulsion.

But these -- I'm certain -- are only the entering wedge of a whole new high-technology industry in transportation research and development. We need multiple breakthroughs in ground transportation. If we don't get them, this Nation is going to grind to a halt and our economy and our standard of living will be seriously jeopardized.

I hope many of you will be participants in this new wave of technological development in transportation. We are on the brink of a new era like the beginning of the golden age of the railroads over 100 years ago. The task then was to tame a continent. Today, we must tame the wild urban spaces, which are much more treacherous. No Indians, but lots of frustrated motorists and vulnerable pedestrians.

What I am saying my friends -- is that I hope you will give the Public Transportation Bill your support.

I hope you will let your colleagues and your Congressmen know how you feel. This Bill is in your personal interest. It is in the public interest because we have got to chop through the tangle of congestion, pollution, ugliness and decay that threatens our cities.

Your support of public transportation, however, should be just the beginning. Mechanical engineers are logical, scientific-minded people. You should become active participants in social problem-solving in your communities. You have a great deal to contribute. You, of all people, know that in today's complex, revolutionary world we must not only have technical solutions but systems solutions and social solutions as well.

For too long, unfortunately, we have been content with purely technical solutions. We have not seen the big picture of how technology affects the balance of nature. We have only begun to realize that the earth is like a space ship. It is a closed system if we waste our natural resources, spoil the landscape and poison the air and water, we will eventually make the entire planet unlivable. Modern engineering can help save us from this disaster. You must help us apply that knowledge.

A few days ago I spoke to a group of students who were studying to become architects, urban planners and environmentalists. They met at Ball State University in Indiana, and are trying to solve complex problems which spread over many disciplines. They were unanimous in hoping that the various branches of the engineering profession would help them develop the over-arching systems and technologies that we need to build a better future.

The challenge and the opportunities today in engineering are immense. We need more Edisons and Ketterings, more Edwin Lands, more Rabinows, more Eastmans, more Lears. Someone must show us how to de-salt seawater cheaply, to tame thermonuclear power, to make edible proteins cheaply in factories. Someone must make the necessary improvements in space propulsion, communications, computers, holography, laser tunneling, instrumentation and a dozen other fields.

I can only hope that the kind of engineering talent that is in this room today will focus some after-hours imagination on some of the tough problems in my own field of transportation. We desperately need a substitute for the internal combustion engine. We need more reliable fail-safe devices on land, at sea, and in the air. We need new ways to move commuters especially in comfort and style -- that may mean dual-mode cars, demand-actuated buses and the so-called "people movers."

But above all, this country needs your participation in the processes of society; it needs your imagination.

The age of the isolated specialist is coming to an end now, and every expert must be a generalist, too. Democracy can only be saved if every citizen -- to use the popular phrase -- gets involved.

I'd say the future is strictly "All Systems Go."

Our engineering triumphs in space have demonstrated again what we can do when we set our sights high and then put together the resources to do the job. The Apollo 12 is a fantastic achievement. You can imagine what we could achieve in earth-bound transportation if we devoted even a fraction as much engineering genius to the task.

Many of you have demonstrated that genius. With your moral and professional support, engineering can become the key discipline in making a more efficient society.

I have every confidence that, working together, we can mobilize public opinion to move toward that goal. It will be a long trek, longer than a trip to the moon.

But there is one thing else that you must do.

The survival of democracy in this Nation may depend upon what role engineers and scientists decide to take in public affairs. We need your wise counsel, as I said earlier. Even more important, we need your participation if politics are to reflect the popular will and stay morally upright.

This means making your voices heard. It means becoming a part of the political process. This too is what Roy Wright would have wanted, as he showed in his own lifetime by becoming a State and local office holder.

There is no reason why engineers should not be as active in politics as businessmen and lawyers. I look forward to that day. There would be no better way to honor the legacy of Roy Wright.

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