

COMMENTARY

TRANSPORTATION TOMORROW: RESEARCH TO THE RESCUE

William T. Coleman, Jr.
Secretary, U.S. Department of Transportation

Transportation is the linchpin that holds together the fabric of America. Without it, this country would quite literally stop running. In such simplicity, there is always drama. There is no disputing the need for deeper research in the realms of transportation and for the artful development of transportation technologies, efficiencies, and economies. I do not believe for a moment that we have exhausted our talent for innovation in this country or that the final frontiers of transportation progress have been crossed.

I undertook this job with 3 purposes in mind: to restore the railroads to the financial, organizational, and physical dignity needed for the tasks ahead; to recalibrate the nation's transportation system, with emphasis on fuel efficiencies, environmental harmony, and safe and convenient service to the public at reasonable costs; and to compress the time required to bring about the reforms, mergers, and regulatory changes modern times demand.

I recognize how important research and development policies and programs can be in the attainment of these goals. In fact, if I were to add a fourth plank to my platform of purposes, it would be to accelerate the payoff of research and development activities.

The glamour systems for rail and transit travel have not materialized. We have found that we cannot get across town as simply as we can get to the moon because we have not taken sufficiently into account the

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social, economic, and political complexities of surface transportation. No prior travel habits had to be changed for the trip to the moon, nor were things such as fares, schedules, which street to use, and operating costs decision factors.

I do not discount the value of long-range, even high-risk, research and development. The necessity, for example, to become self-sufficient in energy almost certainly will require persistent research into new forms of energy, alternative sources of fuel, and new means of propulsion.

When funding for research and development must compete with funding for capital investment, the research and development requirements generally get put on the shelf. Estimates are that in this country we will need as much as a trillion dollars in capital investment in the next decade alone to meet our energy needs. In the transportation area, extremely large sums will be needed for urban transportation and for rebuilding the railroads. Capital investment requirements of the magnitude now before us will make funding "blue-sky" research and development programs an increasingly difficult challenge for both government and industry. Yet, by failing to do so, we will almost certainly weaken our competitive position among the industrialized nations.

Neither can our short-term needs be ignored. Of our transportation research and development funding invested in programs this fiscal year, 77 percent is expected to pay dividends in the next 5 years, 17 percent in 5 to 10 years, and only 6 percent after 1985.

Since so many of our transportation needs grow out of "here-and-now" problems, we need "here-and-now" research. Our current departmentwide research and development program is concentrated in the following several functional, not modal, areas.

1. We put a major emphasis on improving safety. Our Coast Guard, civil aviation, and highway vehicle needs continually tax the state of the art in safety technologies. We need greater research into the cause and cure of aviation accidents and into marine safety to guard against collisions in busy harbor and shore operations and to prevent oil spills and reduce the hazards that cause them.

2. We are putting research and development dollars to good use in the improvement of transportation capacity and service, devoting the largest portion of our research and development budget to problems that range from urban traffic congestion to ways to reduce railroad track failure by providing a more durable rail or improving track geometry. Two additional transportation projects—the transbus and the state-of-the-art car—are now in the demonstration phase.

3. Much of our effort is directed toward cost reduction. I am concerned that the remaining 15 percent of the Interstate Highway System still to be built will cost 39 percent of the estimated cost of the total system. I am concerned by highway construction costs of \$100 million per mile, or even higher in some projects, and by rising subway construction, airport, railroad, and intermodal development costs. I am also concerned over our ability to remake transportation in the shape that today's energy and environmental sensitivities require unless we find more effective ways to cut, curtail, and control costs.

4. Research can be valuable in unlocking new ways to conserve energy and protect the environment. We are spending only about 9 percent of our research funds in these areas this year; but funding, I am confident, will rise in proportion to the yield and in keeping with national priorities. The 40 percent improvement in fuel efficiency we are asking from the motor car manufacturers should, in my opinion, be a starting point and, in any event, a minimum and not a maximum requirement.

5. Research and development provide us future options. They open new vistas, take us where no one else has been, and build the knowledge base on which new and better systems will be structured. This category includes 2 types of research, development, and demonstration work. The first is the high-risk but potentially high-payoff development projects, such as the air-cushion, magnetic-levitation, and linear-induction rail technologies that the department and industry have been exploring for a number of years. The second category aimed at cultivating future options is exemplified by our University Research Program. This serves us well by relating hardware developments to the social and economic environment in which these entities must operate, by expanding the available knowledge on any system or proposal, and by attracting and training the new talent needed to transform transportation in response to today's priorities and tomorrow's needs.

In summary, I believe the payoff from our research and development policies will improve each year based on what we are doing now. The lessons learned in recent years have taught the risks of overoptimism in launching and conducting development projects and the hazards of studying transportation vehicles in isolation from the social environment in which they will function.

Research alone will not rescue our transportation capabilities from the quagmire of inefficiencies that now constrain performance and add to costs. But without well-placed, properly funded research and development programs, our total efforts will be handicapped and our prospects for success diminished. Frankly, I would hate to tackle the road, rail, air, and transit problems currently awaiting solution without the promise of research and development resources as allies.

Then, finally, we need major improvements in transportation if we are to reverse the decline in productivity, which fell 3 percent in 1974—the first actual drop in U.S. productivity since 1947.