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The Asphaltting of America

How the Government Subsidizes Highway Pollution in the Boswash Smog Bank

by

James Sullivan
and Kenneth Lasson

Editor's note: Receiving his Ph.D in meteorology and oceanography from M.I.T. in 1970, Dr. Sullivan founded and is currently a Co-Director of the Center for Science in the Public Interest in Washington, D. C. He is, in addition, the Chairman of the District of Columbia Advisory Committee on Air Pollution. At present, Dr. Sullivan is in the process of completing a handbook for citizen action on highways and highway pollution. His association with Mr. Lasson began when they were both serving as consultants to Ralph Nader at the Center for the Study of Responsive Law.

Mr. Lasson has written extensively in the socio-legal field and included among his most current publications is a recently released book entitled THE WORKERS: PORTRAITS OF NINE AMERICAN JOBHOLDERS (Viking Press, 1971; afterword by Ralph Nader). Excerpts from this book were the foundation for his article "Two Workers" which appeared in the October, 1971 issue of THE ATLANTIC MONTHLY. In addition to his own writings, Mr. Lasson has served as an editorial and administrative consultant to the Center for the Study of Responsive Law and is also a member of the Board of Directors of the Center for Science in the Public Interest. Graduated from The Johns Hopkins University (A.B., 1963; M.A., 1967) and the University of Maryland School of Law (J.D., 1966), Mr. Lasson devotes a substantial portion of his time to teaching at local colleges, including the University of Baltimore School of Law, where he is currently a Lecturer in Environmental Law.

What Hath The Engineers Wrought?

"The improvement in city conditions by the general adoption of the motor car can hardly be overestimated. Streets—clean, dustless, and odorless—with light rubber tired vehicles moving swiftly over their smooth expanse would eliminate a greater part of the nervousness, distraction, and strain of modern metropolitan life."

How innocent the author of those lines, which appeared in the July, 1899 issue of *Scientific American*. Had he only lived to see the reality of

his dreams, the intricate networks of superhighways, thousands of them, linking Sarasota with Seattle, Phoenix with Philadelphia, Bangor with Baja California. What indeed hath the engineers wrought?

Ours is a nation befumed, polluted, totally disillusioned by the congestion which chokes a once-marveled system of turnpikes and cloverleaves. Although it is a lot more noisy and noxious, today's automobile goes together with air pollution just as inevitably as yesterday's horse went with its carriage. No, the ghost of Henry Ford should have said to his son, you can't have one without the other.

To most Americans concerned about the environment but resigned to a vague hope that somewhere, somehow, somebody is doing *some thing* that will stem the dirty tide, it is jolting to learn the degree to which their various governments ignore well-documented causal effects between highway proliferation and air pollution. *Item:* In New York, where millions of commuters are as accustomed to traffic congestion as they are inured to exhaust fumes, a member of the Tri-State Transportation Commission offers the opinion that "all this talk about air pollution is just so much hot air," which will soon blow over. *Item:* Spokesmen for Boston's Bureau of Transportation Planning and Development admit never having viewed air pollution as a factor to be considered in local highway programming. *Item:* The same is true in Hartford, Philadelphia and Baltimore. *Item:* And in Washington, D. C.—with the highest density of automobiles per square mile of any city in the country—a voter referendum and various opinion polls which reflect the public's strong opposition to thoughtless new road building, are all smugly ignored.

To list similar failure around the country would take volumes. While public officials are unanimous in condemning spoliation of the environment (because anti-pollution ballyhoo remains politically desirable), numerous government-financed programs—all of which help to make the streets noisier and the air dirtier and the landscape uglier—are being quietly but substantially expanded.

THE ASPHALTING OF AMERICA

What follows is a brief (if heated) essay on the problems caused by indiscriminate highway planning, based on research compiled last summer during an investigation of environmental impact practices at the United States Department of Transportation (DOT).¹

The Pitch Is A Familiar One

Public sensitivity to environmental issues has never been keener, nor yielded greater frustration. From huge corporate polluters to private motor vehicle owners, many individuals find it impossible to avoid defilement of the air they breathe. Environmentalists place the blame on runaway population or on its concurrent, runaway technology. That people are being sacrificed to progress is a social axiom which has become a hard truth.

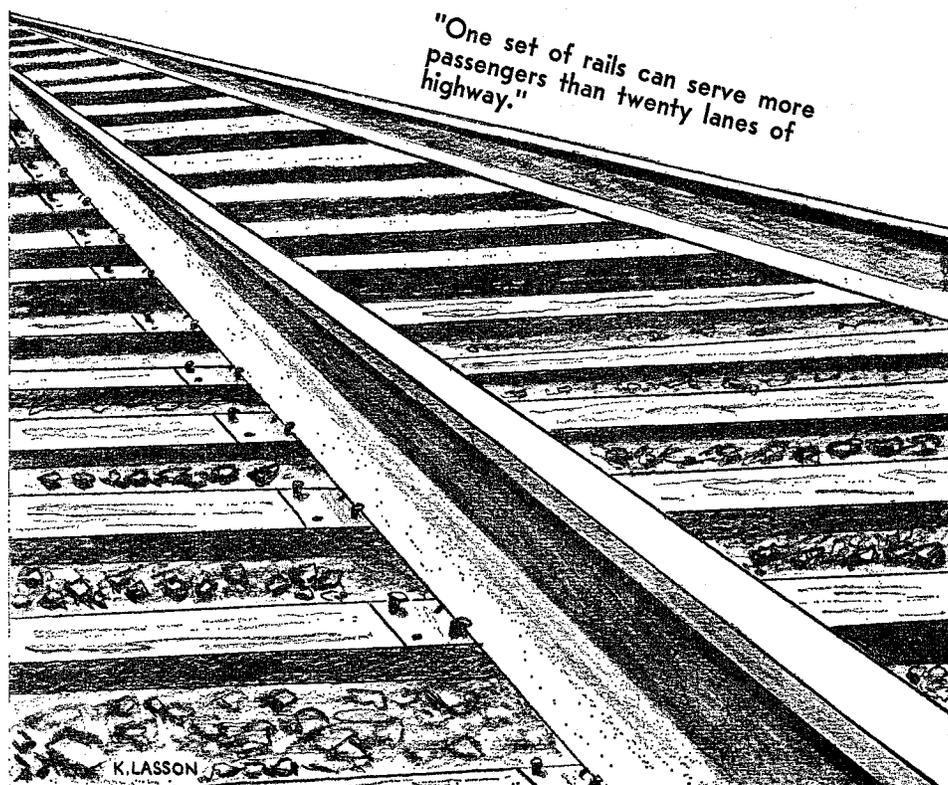
We sponsor supersonic planes, massive housing and shopping developments, and even more turnpikes and expressways, while everyone, blue collar worker and executive alike, is forced to breathe dirty air and drink tainted water. In our daily frenetic exodus away from and back to the suburbs, along clogged and cluttered ribbons of concrete, we are becoming increasingly calloused to the noise and tedium of bumper-to-bumper traffic. To many, it is merely the price of progress.

Despite over \$15 billion spent annually trying to ease nerve-wracking congestion, the hassles

seem only to have gotten worse. Between 1965 and 1970, the number of cars on American highways increased 2.5 times more than did the population. There are now enough automobiles in this country to accommodate every United States citizen in the front, and still leave room for every South American in the back.

The phenomenally excessive growth of our car population underscores the gross neglect of what economists tell us are "social costs"—expenses borne by society for an individual's personal activities, for which he does not pay. Freshman economics courses relate the story about a fisherman who pilots his own boat and tries to catch as many fish as he can, unmindful about depletion of the supply. Pretty soon the lake is fished out. Our congested highways appear completely analogous: each driver neglects the little bit of congestion he contributes to the roadway. Freeways are *free ways* because motorists can ignore the costs of pollution, congestion and noise.

Great Britain, which faces similar problems with highway pollution, estimates the cost of resulting traffic slowdowns to be anywhere from ten cents per mile to \$1.20 for each vehicle, depending on the speed of traffic.² If a driver were to pay damages for the pollutants and noise his car emits—additional social costs—he'd be out \$400 per year.³ The value of homes can decrease substantially if located near a highway. Acoustical experts estimate that to insulate a building from traffic noise means a three percent higher construction cost.



Finally, the oft-cited love affair between the motorist and his automobile is reinforced with the idea that he is getting something for nothing. Roads are as free for the taking as the fish in the sea. But with newer and bigger highways come more and more cars. No matter how effective the emission control devices, our cities are becoming increasingly congested.

While public officials are unanimous in condemning spoliation of the environment... numerous government-financed programs... are being quietly but substantially expanded.

The Great Highway Trust Fund

Not as familiar as the environmental pitch is the hidden but abundant evidence that the federal government, rather than acting to prevent this unfortunate application of Parkinson's Law, substantially aids and abets it. When the federal-aid highway program was initiated in 1916, its purpose was to meet a growing public need, to satisfy the yearning for easy access to the countryside, to get the farmer out of the mud. The system then served three-and-a-half million automobiles. (Now there are three-and-a-half million miles of highway, with twenty-seven cars for each mile. Hard concrete covers an area equivalent to more than half of New England.)

In 1956 Washington chose to further subsidize the roadbuilders' lobby with the greatest boon ever to befall manufacturers of asphalt, rubber and automobiles—the Highway Trust Fund. All, of course, is totally within the law. The Highway Trust Fund *guarantees* that all monies obtained from taxes on gasoline, tires and other items will be spent *exclusively* on construction of new roads, and *precludes* their application to the maintenance of existing highways, or to the planning and development of other forms of transportation.

With such gold so easily available, the states have built new roads at the drop of a planning map. (If they didn't, they could forget about federal support on long-range projects.) Prior to the establishment of the Fund in 1955, \$666 million was spent on federal-aid roads. In 1968, that figure had quintupled to a total of \$3,167 million.⁴ The current tantalizer dangled before the hungry eyes of state road commissioners is the wondrous "ninety-ten plan" (that is, the federal government will contribute ninety cents for every dime paid locally).⁵ What stronger incentive to spread the asphalt?

On the other hand, there is no similar federal support for mass transportation systems like subways or monorails—many times less destructive to the environment. (One set of rails can serve more passengers than twenty lanes of highway.) Over the next five years, approximately \$2.3 billion is slated to issue from the Trust Fund for new

highway construction. Less than \$2 billion has been earmarked for mass transit.⁶ In the 1970's, though, New York City alone will require \$2.5 billion for its rapid transit system.⁷ The Institute for Rapid Transit in Washington estimates that for nineteen metropolitan transit systems, more than \$17 billion will be needed over the next ten years.⁸

The federal government has thus left the cities with no alternative but to build more freeways, apparently oblivious to the reality that they will engender more cars, more congestion, more gasoline taxes, and eventually, as if to rub asphalt into the already festering pollution problem, still more roads.

The Not-So-Great Planning Process

The blatancy of the evil tends to be camouflaged by other federal statutes. No roadbuilding program may be approved that is not based upon "a continuing, comprehensive, transportation planning process."⁹ The National Environmental Policy Act of 1969¹⁰ and various Department of Transportation regulations require that the process consider the environmental impact of any proposed highway project. Nevertheless, if there is a method to the madness of highway bureaucracy, it is weighted in favor of the building interests.

Interviews with responsible planning officials in six cities of the so-called "Boswash Smog Bank" (Boston, Hartford, New York, Philadelphia, Baltimore and Washington), to determine the quality of environmental impact studies, yielded magnificent examples of bureaucratic obfuscation and ignorance.

Thus, a member of New York's Tri-State Transportation Commission offered his opinion that pollution is not a serious problem, especially when compared to something like a garbage strike. The planner conceded that none of New York City's extensive air pollution monitoring data had ever been incorporated into transportation programming. Tri-State's officer in charge of environmental planning described himself as "just a freight man" who had been transferred to his new position when the environment became a hot issue.

Transportation agencies in other cities gave little more reason for public optimism. The Executive Director of the Baltimore Regional Planning Council said that he had "heard of no study" about highway-related air pollution and averred that "the transportation planning process is a joke." There was in fact some meager environmental research done for a two-mile segment of Interstate 70 in Baltimore, but an official of the Maryland State Roads Commission said he "didn't bother" to give it to the Planning Council. The Director of Boston's Bureau of Transportation Planning and Development appeared unconcerned about the quality (or quantity) of his information:

Interviewer: Have any studies been completed with respect to air pollution and highway traffic in the Boston area?

Director: No.

Interviewer: What about the mention of environmental goals in Boston's transportation plans, on file with the Department of Transportation in Washington?

Director: "Concern for the environment" there didn't mean air pollution. It mean things such as land development. Pollution is difficult to measure and it is a relatively new thing.

Interviewer: Has the Massachusetts Department of Public Health, which is furnished with traffic data by your Bureau, made any air pollution studies?

Director: Not that I know of.

Interviewer: If the Health Department had in fact made any studies, would they have gone into the transportation planning process?

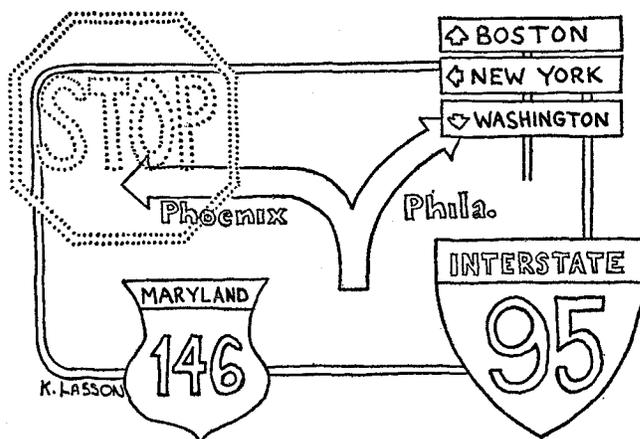
Director: No.

Similarly conspicuous by their absence are air pollution-highway proliferation studies for Philadelphia and Washington. The northeastern cities thereby continue to deposit filth into the Boswash Smog Bank, dooming it to ever-increasing contamination.

The Government Acts

But the real culpability for environmental neglect rests at the federal doorstep. No prophecies-of-doom here. In an engineering report labeled "Travel Time—A Measure of Highway Performance,"¹¹ the Department of Transportation found that traffic speeds on the Long Island Expressway—often called the longest parking lot in the world—averaged up to thirty-five miles per hour during the rush hour. (Commuters participating in the daily Expressway competition are likely to think that estimate high.) The study rejects the familiar picture of monumental traffic snarls, long delays, a paralyzed system, and concludes that "the motorist has been able to maintain and even improve his travel time in the city" (New York).¹² Equally speedy scenes are described in Los Angeles, Detroit, San Francisco, Milwaukee, and other major metropolitan areas.

Another study, entitled "Benefits of Interstate Highways,"¹³ is used by the Federal Highway Administration's public relations department to sell the idea that when new Interstate sections are opened to traffic, congestion on the old routes is reduced by as much as fifty percent. (Is this *reductio ad absurdum*?) What the pamphlet chooses not to mention is that the roads under study were all in rural areas, and that the results cannot be extrapolated to anything but farm country. An engineer involved in the research confided his opinion that city highways become congested almost as soon as they are completed, so saturated with cars are the urban areas.



Present levels of air pollution in the cities—approximately eighty-five percent of which is caused by automobile exhaust fumes¹⁴—have contributed to the rising incidence of chronic respiratory diseases such as lung cancer, emphysema, bronchitis, and asthma. They also aggravate heart disorders, impair vision and increase response time, the latter two effects proven causes of highway accidents. Many commuters suffer from headaches, attributed in part to carbon monoxide poisoning ingested during stop-and-start rush hour traffic. The Smithsonian Institute reports that air pollution has diminished Washington's sunlight by sixteen percent over the last fifty years.

Yet the Highway Administration can produce nothing which so much as acknowledges the theory that more roads might produce more automobiles, nothing which might correlate pollution levels with traffic volumes in large cities, nothing by which to assess the magnitude of air pollution hazards. The emphasis remains, instead, upon the virtues of the interstate system. DOT failures are covered up in much the same way that certain municipal bus systems attempted to mask the noxious fumes emanating from exhausts, by adding rose-scented perfume to the diesel fuel.¹⁵ (The scheme was abandoned when people became sick from the ersatz fragrance.)

The Department's public relations tactics often have about them a Madison Avenue sheen and television commercial illogic which hide pertinent facts. For example, the study of rural highways mentioned above suggests that faster moving cars give off smaller amounts of carbon monoxide. Many engineers believe this proposition to be sheer fantasy: urban highways during rush hours are usually slow-moving, frequently stop-and-start—certainly something less than high-speed. Moreover, while it is true that carbon monoxide emissions slacken at greater speeds, other pollutants such as lead and smog-forming oxides of nitrogen actually increase.

The DOT line is for more than just public consumption. In a report to the President's Council on Environmental Quality, established last year to act as the nation's environmental ombudsman,

the Highway Administration concluded that more highways "would result in impacts on the environment which in most cases will be favorable."¹⁶ But in its First Annual Report the Council stated that the Administration is "chiefly concerned with cost and engineering feasibility," and these factors "overshadow adequate consideration of a project's environmental impact."¹⁷

The Council went on to deplore unhealthy noise levels caused predominantly by motor vehicles, especially buses and trucks. What to the highway people is little more than a "noticeable noise level" can amount to noise pressure of over ninety decibels—enough to cause permanent loss of hearing. Continued exposure to this annoyance could lead to chronic hypertension and ulcers.¹⁸ (Walking to lunch in New York City, the environmental director for the Tri-State Transportation Commission appears to be moving his mouth as if in a silent film, straining to shout through the traffic noise—almost a parody of the roadbuilding lobbyist, and of himself.)

The list of overlooked social costs goes on and on, as do the highways themselves. But roadbuilding cannot be viewed as an issue separate and distinct from the social and economic deterioration of the inner city, from the ghettos, the unsafe streets, the urban blight. In the Watts area of Los Angeles, according to the 1966 White House Conference on Civil Rights, "transportation difficulties discourage job seekers and impose unfair cost on workers least able to meet them."¹⁹ Reliance on highway transportation effectively excludes from the job market the 57% of poor people who have no access to automobiles.²⁰ This federally subsidized imbalance contributed in large measure to the Watts riots of 1964.

The "you-can't-get-there-from-here" syndrome affects other cities as well. A recent study by New York University's Project Labor Market found that transportation in the city often presents an insurmountable barrier to employment.²¹ To get from the poverty areas of central Brooklyn to industrial sections in adjacent Queens without a car, for example, one must board a train that crosses the East River into Manhattan, traverses midtown, tunnels under the river again, and finally deposits its riders in Queens. It is thus easier and faster to get to parts of the Bronx fifteen miles away than to industrial areas only four miles away. Although inhabitants of poverty areas are more dependent on public transportation than residents of middle class sections, the system serves them less well. According to the Project Labor Market study, such a result is easily understandable: it was *designed* to serve the middle class, not the poor.

The Department of Transportation, in the meantime, reports to the Council on Environmental Quality that "new and improved highways will provide greater mobility to more people . . . Highway travel exceeds one trillion vehicle miles annually, about the equivalent of two million round trips to the moon."²² A Department official, asked about demonstration grants for experimental bus

routes from poverty areas to work sites can intimate that such grants are no more than bones thrown to the barking dogs.

Baltimore is perhaps the easiest among the Boswash urban centers in which to get from one place to another. Yet even there, the highway builders' cosmetic approach is overly evident. Last year, the Maryland State Roads Commission hired a public relations firm (Image Compatability Systems, Inc.) to persuade city residents that more highways should be built, that new roads would reduce air pollution. In 1970 almost \$90,000 in taxpayers' money was paid to the firm, and a member of the Image team "predicts" that a continuing public relations effort on the \$837 million expressways will be necessary until the entire system is completed.²³

The Citizens React

Slick public relations, however, are often not enough to whitewash the citizenry. Substantial opposition to the highway lobby is being mounted from all sides. In 1967, residents of Cambridge, Massachusetts were informed that thirteen hundred of their homes would be displaced to make room for an eight-lane inner belt which would cut the city in half. More than five hundred faculty members from Harvard University and the Massachusetts Institute of Technology petitioned Alan Boyd, then Secretary of Transportation, to re-evaluate whether the road "needs to be built at all, in view of major new developments which have occurred since the Inner Belt plan was conceived twenty years ago."²⁴ This opposition burgeoned into overwhelming popular concern, replete with bumper stickers (CAMBRIDGE IS A CITY, NOT A HIGHWAY) and posters. Taking its interest into its own hands, the public forced the state to conduct a complete study of sociological, economic, and environmental ramifications before any more highways are built. The controversy has led Francis Sargent, Governor of Secretary of Transportation John Volpe's home state, to place a ban on virtually all new highway development within Route 128 encircling Boston.

Even New York has on occasion succumbed to the ire of its more concerned citizens. In 1961, Tribourough Bridge and Tunnel Authority chief Robert Moses, urged the City Fathers to take advantage of 90-10 federal funding and to construct a ten-lane Lower Manhattan Expressway connecting the east and west sides of Manhattan. As was their wont, the highwaymen had considered little more than the engineering aspects of the proposed turnpike. But this time the citizens' lobby was able to light some fire in opposition. Buffeted back and forth by the Mayor's office, the Board of Estimates, and the State Legislature, the storm raged until November of 1968 when the local Department of Air Resources released a study which raised the issue of the highway's potential hazards to the health of the community.²⁵ The Board of Estimates yielded to the pressure, and de-mapped the project.

The road building Senate Public Works Committee is chaired by Jennings Randolph of West Virginia. For ten years prior to his election in 1958, (he) was the treasurer of the American Road-builders Association, the 5000-member highway construction industry lobby.

Meanwhile, the electorate in East Baltimore apparently had had enough of George Fallon, Chairman of the House Public Works Committee and winner of the American Road Builders Association (hereinafter ARBA) award for outstanding contributions to the highway program. In November of 1970 Fallon was voted out in favor of Paul Sarbanes, a free-thinking freeway opponent. And a West Baltimore citizens' group which calls itself Volunteers Opposed to the Leakin Park Expressway (V.O.L.P.E., Inc.) has sought court action to enjoin construction of an expressway through one of the largest municipal parks in the country and the only city wilderness park in the United States.²⁶

In Washington, a no-holds-barred fight—to some the Dienbienphu of a long guerilla war between the highway lobby and the citizenry—is still in full swing. New roads are coming under attack for the same reasons: hodge-podge planning and failure to consider anything other than pork-barrel dollars and cents. And the communities with the most at stake, usually black neighborhoods, are forcing the issue.

Under substantial public pressure, the D. C. government agreed to underwrite a long overdue study of air pollution and highway proliferation. By now the fires were already hot. At the November, 1969 elections, eighty-four percent of D. C. voters opposed by referendum construction of the Three Sisters Bridge and related freeways. The referendum itself was virtually ignored, but several months ago a legal challenge to the Bridge achieved tentative victory when plans were ordered remanded for administrative review. In May of 1968, ninety-five percent of the registered Democrats voting in the primary election favored a proposal that would have prohibited new freeway construction unless approved by a specific referendum.²⁷ A 1963 opinion poll by National Analysts, Inc., disclosed that approximately sixty-six percent of automobile- and bus-commuters in the Washington area preferred investment in rapid transit systems, rather than in new highways and parking lots.²⁸

Washingtonians are further rankled by what they consider to be little less than extortion on the part of Congressman William H. Natcher (D., Ky.). The Chairman of the House Appropriations Committee, which controls funds for every District of Columbia development program, has frozen all desperately needed subway financing until freeway construction begins. The end of this controversy is not in sight.

On a few occasions, local governments themselves take the initiative. The Milwaukee City

Council, for example, recently severed diplomatic relations with the Wisconsin highway department and adopted a policy of non-cooperation (i.e., it won't answer letters or return phone calls). Whether this administrative pique is enough to combat the highway lobby remains open to question.

The Lobby And The DOT

Paving America is big business. In 1969, over \$18 billion was spent on highways.²⁹ Transportation accounts for approximately twenty percent of the gross national product. Through the Trust Fund procedure, the highway lobby has been elevated to an exceptionally powerful position, with Capitol Hill as its base. The roadbuilding Senate Public Works Committee is chaired by Jennings Randolph of West Virginia. For ten years prior to his election in 1958, Randolph was the Treasurer of the American Road Builders Association, the 5000 member highway construction industry lobby. (In 1966, ARBA President John P. Moss said of the Senator: "Jennings Randolph is not only our friend—he is one of us.")³⁰ Randolph's counterpart in the House used to be George Fallon, who often received campaign support from the ARBA and the American Trucking Association. (A year after Fallon was named ARBA's annual award winner, Senator Randolph ran off with the prize.)

The highway lobby's influence feeds down very quickly through the Department of Transportation, whose cavalier sponsorship of the asphaltting of America bespeaks either highly questionable motives or extremely narrow minds. Secretary of Transportation John A. Volpe was Commissioner of Public Works in Massachusetts before he became Governor. He was also part owner of one of the largest building construction companies in the country; upon taking state office, he transferred this interest to his brother.

The power kernel of the DOT is the Federal Highway Administration, whose hard agency line lends substantial inertia to the Department and prevents it from responding to the serious environmental problems of the cities. Citizens trying to bring about legitimate reforms to the system inevitably run into the amorphous, immovable mass of bureaucracy. Freedom of information is essential to public participation, but the Highway Administration seems to fill its pot-holes with secrecy.

A more sophisticated technique for withholding facts is through selective gathering of data. Comprehensive air pollution studies and estimates of future contamination levels for American cities are suppressed or excluded. The Tri-State Transportation Commission does not communicate with New York City's Environmental Protection Administration, which has done extensive pollution monitoring. At the federal level air pollution studies are simply ignored.

Perhaps because the highway public relations approach is uncontested, the "transportation planning process" ends up as highway planning. Said an ex-developer with the Bureau of Public Roads: "The highway planner is in the unique and favorable position of being able to plan, almost without regard to other modes of travel." The executive director of Tri-State suggests that the transportation planning process is "more talked about than executed."

One of the more disturbing observations made by the student interviewers was the apparent universality of acceptance by DOT people of the Department's hard-line arguments. No one at DOT expressed anything resembling a negative sentiment about the Department, or saw fit to question the one-sidedness of its policies. Whether the nay-sayers have been filtered out by selection (survival of the conformable), or by other means, is perhaps not as significant as another set of dynamics: the degree of an official's heart-and-soul adherence to the agency line appeared to be directly proportional to his length of service. With the oldest DOT employees there is almost complete Department-self identification.

Some Suggestions

Roadbuilding programs supported by the lobby, steered through the Congress, and trucked into every corner of the federal bureaucracy, have precluded any realistic assessment of the environmental, social, and economic effects of new highways. Criticism is stifled. The chances for clean air, uncongested cities, relative peace and quiet, and fast, efficient urban transportation are thereby greatly diminished.

All of this is especially frustrating in light of the available remedies. Some relatively simple changes in law and policy would bring about substantial improvements in the quality of our environment. We must—

- Eliminate the Highway Trust Fund. Originally intended to lapse in 1972, it should be replaced by funding from general revenues (along with other health, education, and public works programs). At the very least, the Highway Trust Fund should be replaced with a Transportation Trust Fund, which could support *all* modes of travel.

- Restrict the number of cars entering metropolitan areas. This could perhaps best be accomplished by highway tolls to pay for the social costs of automobile use.

- Increase citizen participation by holding hearings on long-range transportation plans, in addition to the present highway hearings required by federal law.

- Conduct objective air, noise and water pollution studies before new roads are built. Mass transit alternatives should be considered in a light other than the shining gloss of freeway pamphlets.

- Promote free expression within the Department of Transportation, and free access to information by the public—especially scientists, engineers, and planners studying environmental, social and economic effects of national transportation policy.

Only by a completely objective assessment of the highway/pollution problem, and by intelligent action to solve it, can we hope to achieve less crowded streets, quieter cities, cleaner air, and a generally more humane environment.

Footnotes

¹ Substantial assistance on this research was rendered by David Weinstein, currently a third year law student at Yale University.

² G. ROTH, PAYING FOR ROADS 29 (1967).

³ Private communication to Mr. Sullivan by Mr. William Wickery, transportation economist at Columbia University.

⁴ STATISTICAL ABSTRACT 543 (1969).

⁵ Federal-Aid Highway Act, 23 U.S.C. § 120 (c) (1958).

⁶ Urban Mass Transportation Assistance Act of 1970, Pub. L. No. 91-453, 84 Stat. 962.

⁷ Testimony of Congressman Edward I. Koch before the HOUSE PUBLIC WORKS COMMITTEE, May 12, 1970.

⁸ Testimony of Dr. William J. Ronan, President of the Institute for Rapid Transit, in hearings before the SUB-COMMITTEE ON HOUSING AND URBAN AFFAIRS, October 15, 1969.

⁹ 23 U.S.C. § 134 (a) (1962).

¹⁰ Pub. L. No. 91-190.

¹¹ Prepared by the URBAN PLANNING DIVISION of the FEDERAL HIGHWAY ADMINISTRATION, January, 1970.

¹² *Id.* at 7.

¹³ HOUSE COMMITTEE ON PUBLIC WORKS, Committee Print 91-41, September, 1970.

¹⁴ See the Air Quality Control Documents published by the OFFICE OF AIR PROGRAMS, ENVIRONMENTAL PROTECTION AGENCY.

¹⁵ Speech delivered by Carlos C. Villarreal, Administrator of the Urban Mass Transit Administration, at the Conservation Foundation Environmental Forum, November 18, 1970.

¹⁶ ENVIRONMENTAL STATEMENT FOR PROPOSED FEDERAL-AID HIGHWAY ACT OF 1970, AND HIGHWAY TRUST FUND EXTENSION ACT OF 1970 (August, 1970) at 2.

¹⁷ COUNCIL ON ENVIRONMENTAL QUALITY, FIRST ANNUAL REPORT 20 (August, 1970).

¹⁸ *Id.* at 126.

¹⁹ M. HARRINGTON, TOWARD A DEMOCRATIC LEFT 38 (1969).

²⁰ This is the percentage of U. S. households with incomes under \$3,000. U. S. DEPARTMENT OF COMMERCE, SPECIAL REPORT OF HOUSEHOLD OWNERSHIP AND PURCHASE OF AUTOMOBILES AND SELECTED HOUSEHOLD DURABLES 65, 1967-1970 series (August, 1967).

²¹ O. ORNATE, TRANSPORTATION NEEDS OF THE POOR (1960).

²² See note 13 *supra* at 4.

²³ Baltimore Sun, Nov. 6, 1970, at C-20, col. 8.

²⁴ H. LEAVITT, SUPERHIGHWAY—SUPERHOAX 56 (1970).

²⁵ *Id.* at 63.

²⁶ *Sierra Club v. Volpe*, Civil No. 71-1118M (D. Md., filed October 12, 1971).

²⁷ Testimony of Peter S. Craig to the JOINT ECONOMIC COMMITTEE, May 6, 1970.

²⁸ *Id.*

²⁹ HIGHWAY STATISTICS, U. S. DEPARTMENT OF TRANSPORTATION (1969).

³⁰ See note 24 *supra* at 111.