

Some Sociological Considerations In Highway Development

THEREL BLACK and JERRILYN BLACK, Department of Sociology,
Utah State College, Logan, Utah

This paper brings out the importance of the human element in highway development and use. It emphasizes that roads are for people and that it is important to consider the needs of people in a broad social context as a basis for highway planning. The paper raises a question: "Will our concern for factors of time, speed, and economy cloud our vision to other social or human needs which highways can help fulfill?"

Such needs as the following are given consideration: The need for relaxation on the highway, the need for simple and personalized road signs, the need for beauty and esthetic feelings, the need for contact with nature, the need for group experience, the need for national defense. Also the concept of social life as being a life lived in neighborhoods and communities is brought into focus. Emphasis is placed on the importance of highway planners taking this fact into consideration.

Thus, it is proposed in a preliminary way that consideration be given to the idea of planning highways in a close functional relation to all other aspects of social life; and that in such planning the personnel from various walks of life be included, in an advisory way at least, on the planning team. In the first phase of the planning, perhaps the technical problems of building and financing the road should not be given the predominant position. After due consideration has been given to the potential place of highways in meeting human needs, then the economics and the technical engineering aspect of the planning can be brought more strategically into the picture. Admittedly the technical and economic aspects of highway building are paramount, but if the thinking is begun with these questions in mind, they may automatically close vision to the broader social and economic possibilities inherent in highway development.

●WHAT is there about a highway that is sociological? If nothing, highway planning could be much more simple. The objective of planners could more easily be to accommodate the most traffic in the shortest time at the lowest cost.

Sociologically, however, the highway is more than a huge conveyor belt of people, goods, and services on the national economic assembly line. It is more than so many cars, so much space, so much structure and material. It is more than a connecting link between places. It is also a social place in which a network of relations and activity attempt to meet a wide variety of personal, social, and cultural needs of human beings.¹ (For simplicity, throughout this paper the personal-social-cultural needs of people are referred to as "social" needs. Occasionally personal needs may be mentioned, but when they are, they are usually within a social context.)

So often people and their social needs make up the least known but most important elements in technological endeavors. If these needs of people could somehow be

¹After this paper was nearly finished, the authors discovered several chapters by William L. Slayton and Richard Dewey in which human need was highlighted as an important key to urban redevelopment. While their report is concerned with planning of cities instead of highways, it was a pleasure to see the congruence in the thinking on the importance of considering human need in the planning process. For a more detailed account of the nature of human need than space will permit presenting here, see their Chapter 2, "Needs and Desires of the Urbanite" in Coleman Woodbury (Editor), *The Future of Cities and Urban Redevelopment*, The University of

ignored, highway planning would be a lot less complicated.

It appears that there are at least two ways planners in highway agencies may treat sociological factors. On the one hand there is the planner who, becoming uneasy of their presence, tosses them as an untidy housewife tosses parcels into a brimful closet, slams the door, and then leans against it in hopes of keeping the stuff from falling out. He calls these factors "intangibles" that give him "mental indigestion," and since they cannot be ascertained in money-terms, he proceeds as if they didn't exist at all.

On the other hand there is the planner who realizes that sociological factors in such technological endeavors need clarification. Many highway planners realize, however, that these factors cannot be reckoned in the same terms as benefit-cost formulas and other economic measuring devices. Such mature planners wish to take a good look at these factors in an attempt to identify, weigh, and utilize them in production of more effective and satisfying highways.²

If these factors could somehow be translated into dollars-and-cents it might appear simpler to incorporate them into plans. Yet, why do such factors need to be translated into money terms to judge their value? Dollars-and-cents, after all, constitute only one index to measure human value.

To illustrate, suppose a physician used the regularity of the heart beat as the only index of health. What about the possibility of chronic infection, low metabolism, low iron content of the blood, or the use of any other index of health? Some rather serious errors might be made if he were to go by the heart-beat index alone.

INDICES OF HUMAN VALUE

In the same way, dollars-and-cents provide an index of human value in highway building that may be too restrictive if used alone. Money is a very convenient index when it can be applied. It must be kept in mind, however, that money is not the value itself, but a reflection of value.

Likewise, in other areas of living, human valuation is going on even though ways of reflecting values are different. For example, a person who attends all the free concerts in his city places a certain value on them. The index of this value is not monetary, because there is no admission charge. Instead, it is attendance. Such an attendance index may be as objective as one using dollars-and-cents. However, no one would advocate trying to convert some type of dollar-and-cents value into an attendance value. It would also be futile to try to translate an attendance or other intangible value into dollars-and-cents.

Perhaps one reason some planners and highway researchers get "mental indigestion" when they attempt to consider intangible social factors is that they are trying to do the futile - trying or wanting to assign monetary value to values that are reflected and measured in non-monetary ways.³ It is desirable to ascertain each

Chicago Press, Chicago, 1953. Also for accounts of human needs as such see any of the following textbooks in sociology or social psychology; Rimbald Young, *Social Psychology*, F. S. Crofts and Co., Inc., New York 1946; Gardner Lindzey (Editor), *Handbook of Social Psychology*, Addison Wesley Press, Cambridge, 1954; Ronald Freedman, et al., *Principles of Sociology*, Henry Holt and Co., New York, 1952.

²The tendency of the Highway Research Board in recent years to invite sociologists, architects, and others to participate in its annual meetings is one evidence of this viewpoint.

³See John W. Gibbons and Albert Proctor, "Economic Costs of Traffic Congestion," *Urban Traffic Congestion*, Bulletin 86, Highway Research Board, Washington, D. C., 1954, pages 9, 10, and 14 for brief discussion of attempts to convert time, comfort and convenience into monetary terms.

different value by means of its own measurement device. The resulting measurements (indices, judgments, ratios, etc.) can then take their proper places as aids to final human judgment of over-all value.

The challenge, then, is to create new or use existing methods, techniques, and indices to measure the wide range of human values that relate to highways. Fortunately, some economic techniques and indices have already been developed, such as the benefit-cost ratio.⁴ Methods to facilitate judgment about non-economic values are less developed; undoubtedly fewer attempts at deriving such methods have been made. Nevertheless, it is known that intangibles about people can be and have been measured. Witness the various measurements of differential abilities in intelligence, personality adjustment inventories, socio-economic indices, attitudes, etc. Thus there is room to believe that something more can be accomplished than is now being done on evaluation of human needs in relation to highways.

For example, an economically oriented person might try to attach money values to time saved, to comfort or convenience, and to reduction of costs of accidents. A sociologically oriented person on the other hand might look at time saved in terms of opportunities for more family life, for rest, for reading, for recreation. Comfort or convenience to the sociologists would be examined not in terms of worth measured in pennies per mile, but in terms of how the traveler interprets and rates these qualities. Accidents would be viewed not in terms of reduced or increased insurance payments on life or automobile, or even in loss of work days, but perhaps in terms of disruption of family life, loneliness of surviving persons, and in terms of inadequate group or community participation of disabled persons.

Researchers need to continue to discover and synthesize previous social research that may apply to highway development, from which new hypotheses will emerge. Such hypotheses about social factors need testing, just as it is necessary to test the strength of concrete, the tension of materials, or relative costs of construction. It is obvious that a successful highway system is based not only on economy, efficiency, and safety, but also on how these and many other social factors promote happiness by filling a wide range of human needs.

USE RESEARCH TO IDENTIFY NEEDS

In the identification of social needs, the research approach can help. Perhaps the highway planner in this day of specialization is too far removed from the "common man" and various types of "uncommon man" to fully understand and evaluate their needs. If he assumes that what has been done before is acceptable, he has no assurance that a sufficiently wide range of needs is being met. If he assumes that such needs will be taken care of intuitively when problems "come to a head," he may be no further. He can hardly set himself up as a judge of people's wants and needs by relying on what he thinks they wish or need. Neither can he conclude upon the basis of his own needs that he knows their needs. Many people tend to think that needs of others are like their own. However, if they were to interview every third or fourth householder on a block or every fifth or sixth auto-

⁴For example, see the following: American Association of State Highway Officials, Committee on Planning and Design Policies, "A Policy on Road User Benefit Analyses for Highway Improvements," Washington, D. C., 1951; C. B. McCollough and John Beakey, "The Economics of Highway Planning," Revised Edition, Oregon State Highway Department, Technical Bulletin No. 7, 1938; Richard M. Zettel, "How Shall Highway Costs and Benefits be Apportioned?," Roads and Engineering Construction (Canada) Vol 91, No. 1, January 1953, pp. 102, 104, 106; R. A. Moyer, "An Analysis of Highway User Benefits on the California Interstate System Resulting from Completion of a 10-Year Full Freeway Program," Institute of Traffic and Transportation Engineering, University of California, Special Report May 1955; A. R. Abelard, "Benefit-Cost Ratio Method of Computing Priorities of Construction," Colorado University, Highway Series No. 22: 46-49, 1949.

mobile driver, they would soon realize that they cannot judge needs of others in this psychologically projective way.

For instance, what mental picture of a driver on the highway might be had if it were assumed that economy is what he is seeking? One would probably think of a time-conscious individual anxious to reduce his time and distance on the road because of threats of economic loss. Such thinking would lead quickly to research that would show how to cut such losses. Used as one guide to policy, such an approach cannot be questioned.

However, such a limited picture of man is too frequently used to determine over-all policy. One wonders if policies so formulated are adequately based upon reality. For instance, people are sometimes advised on how to use the telephone. They are advised to state their business, speak briefly, and hang up. If telephones were used in this efficient economical way, a greater accessibility to them and an increased volume of calls might be possible. However, for every person who uses the telephone in this restricted way, there are many who use it for a much broader social purpose; to visit with neighbors, to strengthen family ties, to exchange pleasantries and greetings. If telephones were to serve only economically rational man, they would serve only a segment of his needs.

A more realistic picture will consider a broader social view of man's nature. Thus a more rounded-out and real picture of a person using a telephone or a driver on the highway is that his economic life constitutes only a segment of his experience, yearning, and activity. In addition to being a producer, servicer, or consumer of economic goods and services, man is also a husband, father, uncle, church member, neighbor, citizen. If roads are built for economic man they serve only a segment of his needs. What are some of these needs?

INDIVIDUAL DIFFERENCES

Needs of people are in many ways alike and in some ways different. In addition, the same person has many different needs. At one time on the highway a person may wish speed and economy; at another he may want relaxation and sociability. A highway plan that is diversified enough to make available a range of choices allows different needs to be filled simultaneously, and also allows the same person to satisfy different needs at various times.

Need for More Freedom to Choose Travel Speed

One of the more obvious needs is in relation to speed and tension on the highway. There may be as many reasons why people drive slower as why others drive fast. These may include physical, as in age;⁵ emotional, as in a newly licensed driver; social, as in a family outing; or esthetic. Yet a driver who does not drive at a fast pace seems out of place on many highways. He becomes an object of hate, ridicule, and even police punishment. This tends to be true, it appears, even where there are certain lanes designated for slower speeds. The slower-driving motorist is coming more and more to be accused of endangering life and limb of his fellow travelers. On highways where slower drivers are "pushed from behind" by fast-moving traffic or by minimum speed laws, they are being tailored to fit the highway rather than the highway being designed to fit the drivers.

On the highways, of course, rules and regulations must be more standardized than rules governing members of society off the highway. In ordinary daily life when

⁵Many older people wisely recognize their slowing reactions by cutting the speed at which they drive. By 1980 about one of every five people in the United States will be 60 years of age or older. (See Paul H. Landis, *Population Problems*, Second Edition, American Book Co., New York, 1954, page 87.) What will happen to this large segment of highway users if they are not given the right to choose the speed that seems wisest to them?

individuals come into conflict involving blows, usually only the strength of the human body is involved. On the highway when interaction moves into conflict or when there is accidental "conflict", the individuals are at the command and mercy of tremendous machine power great enough to kill.

If there is conflict between a slow and a fast driver on the highway, the operator of the faster car carries the more destructive power. Such a conflict would be comparable to a small child fighting a large powerful bully. People would have much sympathy for the small child; yet on the highway are not sympathies often reversed? If research found that a disproportionate amount of resentment was centered toward the slower driver as compared to the fast driver, isn't there a mix-up of values somewhere? Naturally the fast drivers will "win" in either the enforced or laissez-faire war of speed on the highway unless planners intervene with more democratic solutions in the building and management of highways to allow for differences of speed.

Much research seems to have been done in testing the tension of materials that go into highways. It seems just as important to test tension of the human beings who travel upon them. As tests are being made it would be well to consider the point that a person who wishes to go fast but has no choice because of slower drivers is under tension, just as is the person who wishes to but cannot drive slower. The more the highway provides for individual differences, the more freedom there will be from health damaging tension and its many consequences.

Perhaps the idea of the French architect Le Corbusier of traffic lanes made up of seven types of roads varying from throughways down to bicycle and pedestrian paths needs study - not for copying, but for suggestions.⁶

Need for Sociability

NEED FOR SOCIABILITY

Another human need that differs among individuals as well as within the individual at different times is that of sociability. In one way social needs are filled because the highway exists. One can attend a football game or visit friends 40 miles away because of good highways.

In addition, other social enjoyments occur on the highway. In this respect it is a social place. In fact, it might well be that family or friends are more closely knit when in an automobile on the highway than at any other time. In an automobile people are physically close; their attention is upon or among themselves. There is nothing to split them into different activities; no television, no telephone calls, no ringing doorbell, no newspaper. In a car on the highway people are together in a unique way. (That makers of automobiles are sensitive to this need is evident in the small number of autos that are made with one seat, despite the fact that drivers on many occasions are alone.) In fact, the going and coming via the highway are the most important social parts of a trip to spectator events such as movie, game, or meeting. At the event, the interest is attracted outside the group, while enroute the interest is more likely on each other.

The social interaction in an automobile, like small-group interaction in the home, school, church, and community, is very important to the individual.⁷ In fact, small-group face-to-face interaction is the germ of life in the sociological sense. This type of group experience is badly needed, yet not always easy to get in modern large-group urban civilization. Planners can promote this interaction by creating highway

⁶Ernest O. Hauser gives a popular treatment of the various architectural ideas of Le Corbusier in "Rebel in Concrete," *The Saturday Evening Post*, 229, No. 23, December 8, 1956.

⁷George C. Homans, *The Human Group*, Harcourt Brace and Co., New York, 1950; A. Paul Hare, Edgar F. Borgatta and Robert F. Bales (Ed.), *Small Groups: Studies in Social Interaction*, Alfred A. Knopf, New York, 1953; Charles H. Cooley, *Social Organization*, Charles Scribners Sons, New York, 1909.

environments which have wide enough scope to serve sociability needs and which are conducive to relaxation and freedom from fear of other drivers.

Even when there is only one person in a car, the highway may satisfy a need closely related to social needs. This is the opportunity to withdraw into temporary solitude and thought. It may be that being alone on the highway in a car is a person's main respite between two very busy social worlds. Here is another reason why roads need to contribute to relaxed enjoyment.

Need for Esthetic and Recreational Enjoyment

Highway travelers will likely find more satisfaction when the routes they take are beautiful, where conscious attempts have been made to preserve and augment nature by landscaping, provision of roadside camping, eating, and resting places, and by preservation of natural treasures before irreparable damage has been done to them.

Recreational and esthetic elements in highway planning are rather abundant in national and state parks far away from home. On highways that provide for differences in individuals and groups, might not these elements be more fully developed on roads nearer home, where Sunday afternoon and other recreational driving attracts thousands upon thousands of local drivers each week?

Need for Legibility in Road Signs

Another way individuals differ is in the meanings they attach to words and also in their ability to read accurately and rapidly. America is a mobile nation where thrills of travel and desire for "greener pastures" cause large numbers of people to move from one part of the country to another. Under these conditions, it is important that the highways be easy to follow, that road signs, markings, and symbols of all kinds be clear, simple, and personalized.

This can be illustrated by referring to an article entitled "Expressway Signs in the Chicago Metropolitan Area."⁸ The expressway signs finally used were selected on the basis of research on size of letters, color combinations, reflectorization, and illumination. Also, study was given to placement and sign erection. Although almost everything about these signs looks good, an important human element, the message in the sign, was not subjected to research.

Let it be assumed that an out-of-state traveler is coming down US 30 toward Chicago. He sees this particular sign: 159TH STREET EXIT. KEEP RIGHT. The sign has legible letters in effective colors and is well placed; but what does it mean? To one driver it may mean a route to be taken by those who want to exit from 159th Street. The driver might then wonder if by mistake he is now on 159th Street instead of US 30, and that he is approaching a way to get off 159th. To another it may mean that an exit from 159th Street will shortly pour forth its contents of cars on the road he is now traveling. To another it may mean (as it was intended) that it is a route to be taken to get off US 30 and onto 159th Street.

To someone in the Chicago area who has become adjusted to such signs there may be no confusion. But what about people from other places, especially the portion of the population whose lower scholastic aptitude prevents them from extensive verbal manipulation? Does this particular expressway sign miss the social psychology of the traveler? If drivers are actually looking for 159th Street, would it be more appropriate to say something as follows: FOR 159TH STREET, KEEP RIGHT. These words tell a driver where he wants to go, not where he wants to get off. The point is that meanings cannot be omitted from research, because they are closely tied in with human needs.

On highways over the country, lines are painted down the center — double, single,

⁸A paper by William F. Bauch, Jr., and John T. Nagel presented at the Thirty-Third Annual Meeting of the Highway Research Board, and published in Highway Research Board, and published in Highway Research Abstracts, May, 1954.

yellow, white, yellow and white, smooth, broken. Would more uniformity throughout the whole highway system in signs, road markings, color, types of interchanges, simplify meanings for the driver?

NEIGHBORHOODS, COMMUNITIES, AND SPACE

Another sociological aspect of highways is that they can create or break up residential patterns of social life. Such patterns are called neighborhoods and communities, and are very important to the individual.⁹ A highway that boldly slices through neighborhoods and communities can destroy some of the sociological germs of life. If highway planners would ascertain the boundaries of these groupings, and (where feasible) place needed highways near, at, or beyond the boundaries rather than through the centers, much neighborhood and community social life could remain intact.

By providing access to new areas, highways can also create sociological life. Failure to recognize this creative power may lead to short-range planning. Because neighborhoods and communities frequently spring up along highway ribbons, long-range planning can prevent current or future zoning for business of strips adjacent to the highway, so that at no future time can local business traffic interfere with regular traffic. Entries to the highway from yet-to-be communities can be regulated beforehand. Thus, long-range planning can help forestall chaotic development of all adjacent strips.

Long-term planning can also provide permanent open space by regulating what will lie on either side of the highway or by the buying up of green belts as part of the right-of-way before land values increase. If space is not provided at the outset, it may forever be gone. The entire Manhattan Island was bought from the Indians for \$24. In 1811 the city commission reserved only minimal open space for public use because the price of additional land was "uncommonly great." Yet only 45 years later, land purchased for Central Park cost \$5,500,000.¹⁰

PUBLIC RELATIONS

Still another sociological aspect of highways has to do with communication of ideas among groups. Because the function of any public official tends to be created by his culture, it may be that opinions held by the layman have been in part responsible for the highway planner's greater emphasis on economic valuations. It is possible that the layman is not aware of the extent he and others use the highway for varied social purposes. He may tend to think of the highways primarily as conveyor belts or connecting links, in which economic motivation is high. He may not be aware of ways other than by dollars-and-cents to measure value. Thus he may not be willing to approve expenditure of public money to make the highway an effective social place. One often hears the word "frills" to describe indiscriminately both less-important artifacts as well as very important social factors.

Yet the layman is willing to spend money for intangibles in transportation. When he buys a car (even if in the low-priced field) does he buy the one that transports him with maximum efficiency for smallest expenditure? Few men do. Instead, he will spend as much, if not more, than he can for any automobile, paying quite heavily for the extras of comfort, convenience, beauty, sense of personal worth, and prestige that

⁹Rudolf Heberle, "The Application of Fundamental Concepts in Rural Community Studies," *Rural Sociology*, 6, No. 3, 1943; Baker Brownell, *The Human Community, Its Philosophy and Practice for a Time of Crisis*, Harper and Bros., New York, 1950; John H. Kolb and Douglas G. Marshall, "Neighborhood-Community Relationships in Rural Society," *Wisconsin Agricultural Experiment Station, Bulletin 154*, Madison, 1944; Arthur B. Gallion, *The Urban Pattern*, D. Van Nostrand Company, Inc., New York, 1950.

¹⁰*Ibid.*, page 58.

the extra expenditure brings. You would probably find that although some users of the turnpikes use them to save operating costs, a great many more use them for their comfort, convenience, and beauty, not knowing or stopping to think of any economic advantage. Furthermore, they are willing to pay for these conveniences. Perhaps those who desire to convert intangible values into monetary terms have here a monetary measure, though crude, of how badly people want the intangibles in highway service.

If people are willing to pay additional private money for added values in transportation, why are they reluctant to pay for added social benefits in highways via public taxation?

How will the layman become informed about road needs? Who is going to convince him that what is economical in today's budget may not be economical in the long-term perspective? Who is going to define what is "money well spent" in terms of many kinds of human needs?

It appears that a vital program needs to be undertaken by highway departments and agencies to create in the layman more awareness of these and other values that he wants and which, if available, he will pay for on a private basis. Such a program seems particularly important in relation to those people, such as federal and state legislative bodies, who make major decisions about highways and highway appropriations. Even though ideas for technical improvement and development should and do come from highway and other specialists, decisions on appropriations do not.

AGENCY- VERSUS SOCIETY-ORIENTED ECONOMICS AND PRODUCTS

Human needs may sometimes conflict with agency needs. If highway planners and builders consider themselves an agency to spend "well" what money is provided on the short-term basis, who will have the vision to deal preventively and creatively (rather than curatively) with highways of the future? Who is going to see highway economics in terms of social costs and benefits beyond those now calculated in benefit-cost ratios? The manufacturing of the "best" highways at the least cost must not dominate over the long-term society-oriented economics.

Agency-oriented thinking is too restrictive. An example of agency-oriented thinking is the county extension agent who was having difficulty getting farmers to come to meetings at the county seat. Although the farmers hesitated to come to the county seat they were willing to attend meetings held in their own communities. But the county agent regarded as "not economically sound" a suggestion to hold meetings locally, on the grounds that meetings held in the county seat would save transportation costs for the agency. Society-oriented thinking, however, would have considered the much larger total transportation costs when each farmer drives his own car to the county seat.

Agencies of course, are necessary because a certain structuring of relationships is needed in society. Human society is a network of structured (that is, socially defined) relations of persons to persons, of persons to groups, and of groups to groups. The advantage of such structuring is that day-to-day human relations with others can move with a minimum of friction. If every human situation or relation with others had to be defined anew and in all details every time individuals or groups have contact, human behavior would be in a constant state of chaos. Thus society defines the relation of the Bureau of Public Roads to the Congress, the relation of the Bureau to the state highway departments, the relation of the state departments to local highway agencies. Although specific details in these relations are sometimes undefined, the general structure is present.

Even though such a structuring is needed, there are problems relating to it. Agencies in a network of relationships with other agencies may fail to realize their responsibilities to others in and beyond the network; that is, fail to be society-oriented. For example, because county and municipal governments tend to be "creatures" of the state, state highway departments have a superordinate position in the structure of a state highway system. However, agencies with a superordinate position in a democratic society have great responsibility to use democratic pro-

cedures. In society-oriented thinking, people are not forced to passively accept decisions made by some person or agency, for the democratic process will have helped shape the plans as they were being drawn up.

Victor Jones, who has written on metropolitan government, says that "the initiative should be taken by the state not only to coordinate state and local activities but also to foster the integration of local government in metropolitan areas."¹¹

Yet he says: "All too often interested parties are said to have been consulted when they have only been presented with a plan or a decision already wrapped up."¹²

As highway building programs unfold, the need and opportunity for coordination on a federal, state, and local level are ever present. Particularly would such coordinated planning be desirable where metropolitan and other intra-state highways connect or relate to the super inter-state system.

Agency-oriented thinking makes it difficult for agencies working for the same society to pool their creative thought. Society-oriented thinking breaks down artificial barriers between departments and agencies. One way to open communication among these groups might be to hold informal unofficial sessions with selected representatives of various agencies. In such informal meetings no one speaks officially. Yet this type of interaction may produce favorable society-oriented benefits that would not be possible without it.

IMPETUS TO PLANNING

Can federal and state highway planners consciously stimulate a more widespread planning spirit so badly needed in many towns, cities, counties and regions? City planners in general agree that the cities were built for a pre-automobile age which is long passed.¹³ They are anxious to begin or accelerate urban redevelopment so that modern economic and social needs can adequately be served.¹⁴ Many development and redevelopment designs are largely on paper awaiting an impetus. War destruction has been such an impetus in certain European cities. Can national readiness to build roads on a rather gigantic scale become this impetus in the United States? Highway planners could encourage regions, cities, villages, and suburban areas to evolve master plans in order to set up better master highway plans. Highway agencies might thus bring about a revolution in outworn concepts and structures in urban America without taking the responsibility themselves. Such an approach would be an example of fruits of society-oriented thinking.

RECOMMENDATIONS

If concern for construction materials and for time, speed, and economy is not to cloud vision to other social needs that highways can help fill, it is recommended that:

1. Scattered research and ideas on social aspects of highway planning be brought together into a single synthesis, and that further sociological research opportunities be made available.
2. Administrators and specialists in highway agencies take the initiative to include specialists from other fields on highway planning teams.
3. In the early planning stage, major consideration be given to how highways can most effectively meet the wide array of human needs. If thinking is begun with technical and monetary problems, although they are obviously of great importance, vision may automatically be closed to the broader possibilities inherent in highways.

¹¹See Coleman Woodbury, *op. cit.*, page 539.

¹²*Ibid.*, page 539.

¹³Gallion, *op. cit.*, chapter 14.

¹⁴Coleman Woodbury, *op. cit.*, particularly Part 1.