Special
Report
105

Transportation and Community Values

Highway Research Board
National Research Council
National Academy of Sciences—National Academy of Engineering

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Errata

Page v (Foreword)	The name of Kevin Heanue was inadvertently omitted from the list of members of the National Academy of Sciences-Highway Research Board Advisory Committee.
Page 27	The affiliation of Vincent J. Hearing was not completely identified. It should read: Acting Director, Office of Urban Transportation Development and Liaison, Department of Housing and Urban Development.
Page 175	The name of Martin Convisser was misspelled in the list of conference participants.

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Report
105

Transportation and Community Values

Report of a Conference Held at Warrenton, Virginia, March 2-5, 1969

Subject Area
82 Urban Community Values

HIGHWAY RESEARCH BOARD
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Foreword

From the evening of March 2 through noon of March 5, 1969, more than 80 specialists from a variety of disciplines, drawn from many agencies and universities across the United States, met in Warrenton, Virginia, to confer on the subject of transportation and community values. The Conference was sponsored by the Bureau of Public Roads of the Federal Highway Administration, Department of Transportation, and the Department of Housing and Urban Development. The Urban Mass Transportation Administration was a cooperating agency. The Conference was conducted by the Highway Research Board. Organization and direction of the Conference was the general responsibility of the National Academy of Sciences-Highway Research Board Advisory Committee consisting of Frederick T. Aschman, Chairman, Leon Cole, Richard Hage, Jonathan Howes, Samuel Klausner, Robert McManus, Thomas Melone, Lloyd Rivard, Joseph Schofer, and Clarence Steele, and ex officio members Alexander Clark, National Research Council, Division of Behavioral Science, and Roger Creighton, Conference Consultant. James A. Scott of the Highway Research Board assisted as staff liaison.

The objectives of the Conference, which were laid down at the outset by the sponsoring agencies, indicated the breadth of concern of these agencies and their desire to develop better methods for understanding community values in the context of the process of planning and building transportation facilities. The objectives were:

1. To summarize the current understanding and state of knowledge concerning identification and quantification of community values;
2. To summarize the accomplishments to date of efforts to relate community value factors to the transportation planning and political decision-making process;
3. To identify the community value issues that should be considered in the transportation planning process and propose one or several combinations of existing techniques to identify and measure these values and the methods for immediately integrating them into the transportation planning process;
4. To lay down realistic guidelines for immediate action programs and/or policies for resolving many of the issues and conditions currently existing in today's communities; and
5. To identify areas of needed research on transportation and community values.

While these objectives served as a framework for conference activities, it was, of course, clearly understood that full realization of such broad and far-reaching goals could only be approached in a 2½-day conference. Many of the complex social

problems have been the subject of study for many years and have proved intractable. Neither the Highway Research Board nor the sponsoring agencies expected them to fall to this attack, yet useful progress was made in bringing together and fostering discussion among the people who seldom have occasion to consider these questions together.

The Conference findings and recommendations were carefully considered by more than 80 thoughtful and concerned individuals, each bringing personal background and expertise in the matters at hand. The findings and recommendations are addressed to those government agencies (federal, state, and local), planning groups, citizens organizations, and individuals who are involved in the process of planning the urban environment and transportation systems that are vital parts of the environment. The calls for research are addressed primarily to the several federal agencies and other organizations that are facing these problems, that recognize the need for research, and are in a position to fund it.

The title of the Conference, "Transportation and Community Values," might conceivably relate to a variety of situations. As understood here, the title refers to the construction of transportation facilities within heavily populated areas. The impacts of these new facilities, both positive and negative, are at issue. The "community values" referred to in the title are generally social values that are disrupted or enhanced and thus lie at the root of the vigorous discussion that develops when new facilities are planned within a community. The task of the Highway Research Board would be simplified if transportation problems could be isolated from the other problems of our urban society. It is obvious, however, that community values merge with all the other social criteria applied to communities and will require the attention of thoughful men not only in transportation but also in other fields as well.

This volume contains the prepared papers and case studies presented at the Conference, and a summary of the main content of the conference deliberations, together with recommendations approved by the Conference Committee. The opinions and conclusions are not necessarily those of the National Academy of Sciences or the sponsoring agencies, the U. S. Department of Housing and Urban Development and the U. S. Department of Transportation.

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Transportation and Community Values

Part I
Conference Summary and Recommendations

Conference Summary

ROGER L. CREIGHTON, President, Creighton-Hamburg, Inc.

This summary of the Conference on Transportation and Community Values attempts to weave together into a single fabric the ideas brought out in papers and discussions at Airlie House. In many ways, bringing unity out of a diversity of ideas is an impossible task. There are so many opposing positions: regional needs versus local desires; national policy versus local policy; mobility versus stability; participation versus efficiency and decisiveness; and the desire for scientific research and measurement versus the pragmatic approach. Furthermore, the problems of transportation as they relate to community values are very difficult ones; if they were easy, solutions would have been found before.

Perhaps it was this difficulty and this challenge that provided the excitement of the meetings. Certainly the diversity of an articulate group produced an increased awareness of others' problems, and this was one of the outstanding features of the Conference. But equally rewarding was the assembly of ideas and insights, and the struggle to produce recommendations to improve our ability to build transportation facilities in urban areas in better consonance with people's needs.

The Conference was originally called because of deep concern over the relationship of transportation and community values. This came about for two reasons. First, there had been an increasing awareness on the part of transportation officials of the side-effects of the construction and presence of major new expressways and transit lines, and the desire to use the occasion of the construction of new transportation facilities to produce positive improvements in the communities through which such facilities run.

Second, as is well known, proposals for the construction of new transportation facilities have met with increasing opposition in recent years. In San Francisco, New York City, Cambridge (Massachusetts), New Orleans, Washington, and other cities, expressway projects have been halted or delayed. In Berkeley the proposed construction of an elevated transit line met with such substantial community opposition that extra funds had to be raised to build the line in a subway.

Such opposition to transportation facility construction means that people expect to be hurt—that it is anticipated that various needs and desires of local communities will not be met. What are these needs? What values do people hold that will not be met? How can needs and values be taken into account in planning and building new transportation facilities?

These and other similar questions have been raised ever since the 1958 Sagamore Conference (1), but with increasing insistence more recently. Consequently, the Highway Research Board proposed to undertake a special study of community values as they relate to transportation. A key feature of this study was the Airlie Conference, where specialists from many different disciplines were called in to contribute their knowledge and experience.

THE BASIC PROBLEM

About 6,000 miles of the Federal-Aid Interstate System remain to be constructed in urban areas, together with additional miles of other expressways and rail transit lines. These transportation facilities will have a direct impact upon people in their homes and neighborhoods, in their institutions, and in their business and social activities.

Clearly one task of the future is to reduce the harmful impacts of the construction of new transportation facilities. But aside from reducing harmful impact, there is the opportunity to use transportation facilities as instruments of creative change. Cities

need orderly development and a much higher quality of life. As Irving Hand[1] wrote, "We are in the eternal business of building a nation—a people." Transportation can be a catalyst for elevating the quality of the urban environment.

If transportation is to be so used, it is imperative to learn what it is that people want, or value. One would like to talk about all values, since (as William Carey noted) they have wide impact "on all aspects of community development, only one of which is transportation." The Williamsburg Resolves (2), as Edward H. Holmes pointed out, stressed the idea that transportation facilities "must be directed toward raising urban standards and enhancing the aggregate of community values...." Planners and engineers must not only know about all these values, and particularly about those most closely related to transportation, but must be able to deal with values in a logical way. This has been the manner of the past in working with user values (e.g., accidents, costs, and time). Can logical methods be developed for dealing with the other things people want? Vincent J. Hearing, for example, referred to the problem of translating values into useful factors that can be employed in "design equations".

To incorporate values in the process of transportation planning, it is necessary to identify values and to understand their complex interrelationships. If this can be done, then the designer and the administrator should be able to make decisions that more closely conform to the public will.

VALUATION

One of the first tasks of the Conference was to establish a working consensus of "values" or "valuation" so that subsequent discussions could use a common language. Kenneth Boulding's paper pointed out that "value" used as a noun represents a virtually non-existent object. It is a concept created by our language. Value is more accurately a verb. We value things, or conditions, or certain relationships; in other words, we rate things, placing them high or low on our scale of preference. Valuation is a process.

By dealing with valuation as a process, some of the confusion that comes from dealing with "values" as nouns is eliminated. The noun "value" implies a kind of mental object that can be treated separately from people and the real situations confronting them. But valuation as a process leads us to think first about the people who do the valuing, and second about the thing (or condition, or relationship) they value. Our attention is now people-oriented and object-oriented.

This might be illustrated as follows. Imagine a person regarding a series of objects lying on the ground a few yards away. Some of these objects will be distinct; others will be indistinct. Between the observer and the objects stands an array of vertical rods, of different lengths and with different scales on each rod. There is one rod for each object. The person mentally places each object at a different height on each rod, the height corresponding to his evaluation of the worth of that object. The mentally perceived position of all objects is that person's set of evaluations.

Sometimes the person may move to a different position—that is, he may adopt a different role. Unless he is honest with himself, he may forget his former role, and change his set of ratings. One person can play a large number of roles; Joseph Schofer's workshop, for example, listed about forty.

In any urban community there are large numbers of people. They all observe transportation facilities, and other things, from slightly different angles, and from different distances. All these individuals have the potential of rating things and they rate them in different ways—sometimes substantially differently, sometimes in much the same way.

At the same time there are large numbers of things that people, groups, and organizations are evaluating. Lists of these were prepared at the Conference. Some of

[1]All quotes and attributions are to papers or statements given at the Conference and reproduced in this report.

the things people value are tangible and measurable, like cost and safety. Others are intangible and more difficult to measure—like respect, the emotional impact of relocation, participation, and aesthetics.

The combination of many people, many roles, and many tangible and intangible things occupying different positions on preference scales suggests the complexity of the subject and the difficulty of reaching decisions in this subject area. We have to set aside the initial idea of values as a kind of mental object to be sampled, polled, or counted like beans in a jar. Instead, we have to deal with the active thinking of thousands of people, and their choices between limited options.

THE ROOT OF THE VALUATION PROCESS

While a few of the things that people value highly, including perhaps desire for safety and dislike of undue noise and vibration, are born with us, most valuation is apparently learned through communication between people. In Boulding's words, "...the whole elegant structure of human values is learned by a process of information input, output, and feedback." Children exchange information with their parents, and rewards and punishments establish evaluation patterns in the children. Citizens communicate with citizens, professionals with professionals, politicians with politicians, groups with their own groups and with other groups. In all these exchanges of information, different sets of evaluations are built up and modified.

Because of intra-group communication, the sets of evaluations of persons in a group (or in a common role) tend to converge into a common set, which Boulding calls a "value system". Obviously, all persons in a group will not hold identical evaluation-sets, but their sets will tend to be very similar.

If information flow is the key to the forming of group evaluation-sets, then it is easy to understand how different groups can have different sets of evaluations, especially to the extent that their communication lines are directed inward, or closed to outside influence. Thus, a professional group may have too limited a contact with citizens. A minority community may have too limited a contact with the majority. The majority may not listen to the minority; it may "tune them out".

Do evaluation-sets of different groups differ in major respects? The Conference recognized differences. John Lansing noted, "I think it is quite reasonable to suppose that the value systems of different racial groups . . . and of people of different socio-economic status are different." But C. A. Steele took a middle view: "There are more similarities than there are differences among us." This seemed to be the accepted view. People are basically the same, but live in different places, have different choices open to them (some more restricted than others), and face different pressures. Under these circumstances, they are bound to rate some things more highly than other people do.

On the subject of the stability or changeability of values, opinions were divided at the Conference. If there was agreement, it was that there is a great deal of constancy in people's evaluation of basic needs, especially in the essential need for air, for space, and for the opportunity, as Miss Mattie Humphrey put it, to harmonize "aspirations, intellect, and physical being." But, it was also clear that if information influences the establishment of evaluation-sets, then it can also modify those sets over time, at least in some degree.

This led naturally to a third theme, which was the role of public agencies, private groups, and business groups in modifying people's evaluation-sets. All these organizations depend upon the ways in which people value the organization's products or services, and hence often act either directly, as in advertising, or indirectly to change the way people evaluate their product or services.

If the source of valuation systems is information, then the key to change is information. Good information systems permit the discovery of things that people, groups, or organizations value highly. Good information systems should permit a two-way flow of ideas, thus encouraging accommodation. As John Legarra and Thomas Lammers wrote, "There is one main point that we believe is essential...and that is adequate com-

munication between the highway organization and the people involved. These people are all the people, from a single resident to all parts of the local governing bodies."

THINGS PEOPLE VALUE THAT ARE RELATED TO TRANSPORTATION

Workshops led by Allan Feldt and Joseph Schofer were assigned the task of developing lists of things people value. Proceeding independently, the two workshops prepared lists that were very similar. The two lists have been combined, grouping items into the four categories of social, environmental, transportation-related, and economic needs. Later, Miss Humphrey, Mr. Milano, and Mr. Schloss spelled out their own appraisal of needs at the panel session, "The Resident Looks at Values". Without exception, the needs seen by these three individuals, each of whom has lived through some of the problems of the impact of transportation facilities (whether actual or proposed), are included in the list developed from the Feldt and Schofer workshops.

The similarity of viewpoints on the content of a list of things people value is not intended to convey the idea that the list that follows is complete. It does, however, represent the thinking of what the widely representative group attending the Conference felt are important needs related to transportation. Such a list may be extended later and the language describing some of the items may change after further research.

It is important to recognize that many of the items on the list are constants. People's evaluations of these things differ, and will change in time, but the things people value remain the same.

This list differs distinctly from many previous lists of goals and values in that it includes personal needs of a social nature—needs such as identity, participation, control, and recognition. These are in addition to the customary environmental, transportation-user, and economic needs. As Hand wrote, "Today the issues that are real are the social issues; the values that are of the first priority are the social values." This view was consistently recognized by the conferees—not only by academicians, but by engineers and planners.

In preparing the list, it was recognized that some things would be more highly valued by some groups than by others. While it would have been impossible to prepare a matrix at the Conference, cross-tabulating the many things valued by each of a very large number of groups, Feldt's workshop hypothesized that certain things are more strongly valued by minority groups (such as black, Spanish-American, or Indian communities) and other things are valued more strongly by the white, middle-class majority. For example, having a sense of community, personal identity, and control of a territory or "turf" by one's own community was held to be more important for minority groups generally, and these items are especially threatened by new transportation lines and other major public improvements. The majority finds accessibility to the whole city important, and also such things as preservation of historical and aesthetic features. What people value highly is a clue both to areas of depreviation and of satisfaction.

One final comment: The items are accompanied by undefined adjectives, or they imply relative qualities. The workshops could not define exactly how clean air should be, or how much privacy or control people should have. The idea of what people want has been clearly expressed, but the lists do not convey how much of these things or qualities they desire—or are willing to pay for, or trade-off, one thing for another.

A. Basic Social Needs

1. Personal identity and recognition
2. Control over own destinies—a voice in decision-making; involvement and participation
3. A sense of community or belonging (at the local level)
4. Territoriality—identification with a bounded "turf" or neighborhood
5. A sense of being part of a united society at the metropolitan level
6. Compatible neighbors
7. Compatible playmates for children
8. Stability and security; lack of anxiety

B. Basic Environmental Needs

1. Clean air, unpolluted water, trash-free land
2. Low levels of noise and vibration
3. Conveniently situated local services: parks, schools, shops, churches
4. Compatible mixtures of land uses
5. Adequate shelter
6. Privacy
7. Uncongested transportation systems (in the locality)
8. Preservation of buildings and sites of unusual beauty or historical and architectural interests
9. Preservation of established neighborhoods
10. Environment allowing social contact within the neighborhood
11. Safety and security, especially for children
12. Avoidance of commotion, such as during major construction

C. Basic Access Needs

1. Access to employment, whether one has an automobile or not
2. Access to the facilities and services of an entire city, whether one has an automobile or not; mobility, opportunity, and variety
3. Low travel times
4. Low travel costs
5. Safety while traveling
6. Reliable means of travel
7. Comfort and convenience in travel
8. Choice of mode of travel
9. A transportation system that is comprehensible because it is orderly; one can find one's way around easily

D. Basic Economic Needs

1. Avoidance of financial losses occasioned by the construction of transportation facilities
2. Preservation of community tax base (municipal or county)
3. Maintenance of economic stability of a community
4. Low transportation costs, both capital and operating
5. Encouragement of economic growth, especially for the lower income and minority groups.

The foregoing are the kinds of things that should be taken into account in the transportation planning process, particularly as that process is concerned with the location and design of new facilities affecting neighborhoods and communities within an urban area.

PROBLEMS OF RELATING VALUE SYSTEMS

While it is possible to list things people value, a more critical problem is how to relate some of these items to other items. Relative importance is critical because some things have to be traded off and it is necessary to know how many units of one good thing people will be willing to trade off for units of another good thing.

As Holmes pointed out, conflicts between the things that people want are inevitable. They are inevitable because resources are limited. If people had infinite power, infinite material wealth, and infinite wisdom and concern for others, then there would be no difficulty—perhaps. But the scarcity of resources creates a situation in which hard choices have to be made.

This is the position in which the transportation administrator constantly finds himself. He has been assigned a role of building transportation facilities in urban areas. But this activity calls for actions that withdraw from other people some of the things they value very highly—their homes, portions of their parks, the status quo of communities. The transportation administrator has to decide whether or how much he

should modify his own program, at increased cost in time and money, in order to reduce claims of damage to the things people want. If it were possible to relate dollar construction cost to community identity, or the value of historic buildings, then the transportation administrator's work would be easier.

A special workshop under the leadership of Siegfried Breuning listed a number of techniques by which people's valuations of various items, both tangible and intangible, could be measured. These included participant observation, structured and unstructured attitude surveys, paired comparisons, operational gaming, weighting schemes involving participants, and activity analysis. The availability of measurement techniques was indicated by George Peterson and others in communications received after the Conference. Some of these techniques are evidently valid and worth using.

However, it was equally clear that in very few cases have scientific methods of establishing evaluation patterns been applied to transportation problems. The fact that this has not been done, as Margaret Shaffer pointed out, is not an excuse for failing to make this kind of attempt.

Nevertheless, given the multiplicity of needs such as have been listed, it seemed clear that there is at present no known scientific method for reliably and conveniently determining all these trade-offs. Thus, on one of its important assignments, the Conference came to a negative conclusion. This conclusion is corroborated by the report of M.I.T.'s Urban Systems Laboratory on National Cooperative Highway Research Program Project 8-8, "The Impact of Highway Upon Environmental Values," which says, in part, that "it is not possible to get a complete, consistent, operational set of values which represent the consensus of the community affected that can be used for evaluation."

Given this negative conclusion, and the prospect that for some time at least there will be no technique adaptable for what might be called "field use" by the transportation departments, we are forced to re-examine the idea of using "values as elements in design equations". (It must be recognized, of course, that this concept was probably never meant literally.)

It is certain that people will continue to rate things, and will act accordingly. But their ratings are actions that are intangible and largely unmeasureable, and across-the-board comparisons are impossible. Under these circumstances, what is the transportation department supposed to do? Decisions still need to be made. People still call for things to be done "better" than in the past. Compensation needs to be paid, and perhaps indirect compensation as well.

The Conference did receive a group of suggestions which, if followed, would help transportation departments to take more of the things people value into account in their daily work.

One idea was that failure to possess a handy rating system should not be considered a disadvantage. In fact, having such a system might likely become a liability in today's political climate. With a system, there would be a great temptation for design engineers to withdraw into their offices to plot out that location for a new transportation facility that had a rating such as "least total human annoyance". This would be planning for people, in a time when a more egalitarian society (as Alan Altshuler and others pointed out) is calling for planning with people.

The lack of system in rating calls for a deliberate effort on the part of the planners of transportation facilities to involve themselves with and obtain the participation of people in the community or communities through which the new transportation facility is to be located. If there is involvement, then the things people value may be brought out through their participation, and the importance of these things can be indicated by the people involved. Such a procedure was used in the case of the Watts-Century Freeway. The participation of the community produced support for the project, and in the course of the work, the problems (such as relocation and type of housing to be built for replacement housing) were exposed and could be dealt with.

Next, if we look at the things people want, we can see that only part of them are affected by the physical presence of a new highway or transit line. These are things like preserving the physical unity of a neighborhood, keeping noise and vibration at a low

level, and so on. These things, which people value, can be taken into account when route location and design decisions are made. Designers know what they are, and should be able to design taking these factors into account.

But there are many other things that people value which are affected more by the process of planning or by the process of making financial reparation for land takings or relocation payments. Thus, the valued "control over own destinies" can be fulfilled or not fulfilled by the manner in which a transportation department deals with a community. If the community is ignored or pressured to acquiesce, then it will likely be offended and it will react accordingly.

In dealing with these intangibles, the Rev. Robert Howes made the point that the construction of new transportation facilities, and even the process of planning new transportation facilities, is bound to cause some losses to people—not only in money, but also in intangible things. Not every person can be consulted. Not every favorite or beautiful tree can be saved or transplanted. But people may be willing to make sacrifices and adjustments—at least small ones—provided that they have confidence that what they are losing is, in fact, a contribution toward a common good.

They must have confidence in the basic integrity (Howes' "metropolitan morality") of the government and in the integrity of the planners and agencies laying out the system. They realize that they have to depend upon specialists—that participation or involvement can never be complete. If the people's confidence is attained (and this can only be accomplished over a period of years) then they may be willing to work with government and accept compromises that may hurt them.

However (and this will be dealt with more fully in the next section), the difficulty is that at present there is an extreme lack of confidence in government, and in "the system". Especially among minority groups, "the system" is seen as having worked to their disadvantage. While this state may not be principally the result of actions by transportation agencies, it affects their work nonetheless.

THE ENVIRONMENT OF THE PROBLEM—THE URBAN CRISIS

At the geographical level of the community within any given urban area, some conflict is inevitable when a new transportation facility is proposed. Some people who value their present apartments, homes, and neighborhoods must be moved while others must remain to be bothered by construction and ultimately by an operating transportation facility itself. Paul Ylvisaker called this inevitable and fundamental conflict "the conflict between mobility and stability."

Resolving the conflict between mobility and stability is difficult enough, but the difficulty is increased greatly by the stresses that have been, and are currently, wracking American cities. This point was recognized consistently throughout the Conference.

As Ylvisaker pointed out, our society has operated so that the poor and the dependent have come to congregate in the "unstable environment of deteriorating urban ghettos and gray areas. More than half these migrants are too young to vote....Half the urban poor are in households that can never expect to become self-supporting. For the rest, jobs and skills are hard to come by, so they do not easily acquire their fair share of economic power. The tax jurisdictions they reside in are cut off from a fair share of public revenues. Religious, cultural, and educational institutions shrivel up or are transplanted elsewhere....Finding a home...in this environment is difficult enough. Achieving stability, in the sense of security, has been all but impossible."

It is often extremely difficult for a member of the white majority to perceive the depth and critical nature of urban problems felt by many minority residents. (Here, "minority" means all minorities, as Ruben Ramirez and others declared.) Some feeling for that comes, however, from reading the words of a member of one minority group, Ralph W. Bonner of Michigan:

> In the urban ghetto the basic problem is powerlessness. That powerlessness is deeply rooted in a negative self-perception. This means that the problem not only lies in an inability to solve problems, but to a much greater

> extent in the communities' unwillingness to try because they feel from past history that they cannot succeed.
> . . . present federal solutions deal only with the symptoms and can do little more than improve physical conditions, but it can do nothing to improve the problem-solving capacities or psychological life-style, . . . it can do nothing to improve problem-solving capacities because it attempts, in fact, to preempt problem solving by trying to solve the problems for the people.

The point is that as transportation facilities are proposed, they encounter a situation that is already hurting from racial tensions, from inadequate housing, from poverty, and from central city financial crises. Under such circumstances, there is little wonder that transportation facilities have faced hostile opposition.

Moreover, as Ylvisaker again pointed out, the people who live in ghettos or "gray areas" feel that they are exposed to more of the costs and fewer of the benefits of the construction of transportation facilities, particularly expressways. This is corroborated by the list of things valued, given earlier in this summary, wherein mobility was accented as being valued more by some groups while conveniently located services are valued more by others.

Under these circumstances, the simple principle of majoritarian rule does not work. Pressure groups have been built up. Riots may erupt. Society can be disrupted by small groups, perhaps even destroyed. In short, the urban situation is simply too grave to justify ramming new transportation facilities through cities.

Under these circumstances, special kinds of actions are needed, both for the short and the long run. Ylvisaker suggested three kinds of actions.

First, solutions cannot be worked out in the existing urban area alone and particularly not in the central city alone. New housing with related services and industry is needed on new land, either near the existing city, or in new cities planned in coordination with the transportation system. The purpose of such actions would be to relieve pressure within the cities, to provide replacement housing, and to develop superior urban environments for more people.

Second, the interactions between transportation, housing, agriculture, migration, welfare, and other "systems" needs to be better understood. Mechanization of agriculture, for example, helped to force blacks into northern city ghettos. We need to strengthen our capacity to deal with such systems, in order to be able to understand better the probable effects of programs—both government and private.

Third, we need to strengthen our capacity to deal with small groups, and to lead people. Unless aggregate policy and local experience coincide—or at least unless they are not at cross purposes as they are now—then there will be continuing trouble.

THE ENVIRONMENT OF THE PROBLEM—THE POLITICAL SETTING

Altshuler looked at the issues as a political scientist. Mobility and a large automobile-owning majority of society find their expressions in national policy for the construction of roads, and parallel policies of low-density land development. National policy for mobility, as expressed in extensive construction of expressways, comes into conflict with local policy. Local governments are too numerous and too weak to develop major transportation systems. They are to responsive to the pressures of "veto groups". Hence, by implication, only national (or possibly state) governments can carry large new transportation systems into being.

The conflicts and stresses between national and local policy are most severe in central cities. In these cities, minority groups occupy large areas, but they do not have the kind of direct representation that the suburban residents have, where a few hundred or a few thousand people can create a veto group to block action or command concessions. Minorities in large cities have no easy direct representation when working with a municipal government having jurisdiction over a million or more people. Nor do they have practice in making the hard choices that come with responsibility. Hence, they are more vulnerable.

In all cases, the political issue is to bring about reconciliation and fair adjustments. But there are formulas or shortcuts to such solutions.

Given time, Altshuler pointed out, bureaucracies do adjust to meet the needs of their constituents. And very important adjustments have been made, particularly in the landmark increases in compensation and relocation payments authorized by the Highway Act of 1968. But sometimes demands for change increase faster than adjustments can be made.

To get more reconciliation and better adjustments, Altshuler suggested several policies, including the following:

First, there should be more flexibility in the planning and financing of urban transportation systems. More systems, more types of roads, and consideration of investing a higher proportion of funds in transit are ideas that need exploration.

Second, there should be a policy of expanded use of the urban design concept team.

Third, there should be a policy of greater participation on the part of the communities involved.

TOWARD SOLUTION

Two papers given at the Conference brought the group into contact with the real world of alignment alternatives, costs, engineering, and the variety of different human circumstances attending each different problem of finding solutions to location and design problems of urban expressways. In these two cases, quite different approaches were followed by the design agencies, and yet each approach tended to reinforce the basic thinking of the Conference on how to deal with the problems of people's value systems.

In the Watts-Century Freeway case (as described by Stuart Hill) the California Division of Highways was faced with the task of finding a path through the extremely sensitive Watts area. Three principles guided the planning of this project:

1. Involvement—The Watts community was encouraged to become involved in the project. The Watts community helped to select the alignment for the expressway from among a number of alternatives. The community participated in the relocation planning. As Hill notes, "We contacted home improvement associations, street improvement assocations, garden clubs, churches, every conceivable group that seemed to have an interest in the effect of the highway upon this community...."
2. Use of capital locally—The cash funds that would be injected into the community (about $100 million) by the state's purchase of right-of-way were seen as a resource which the recipients should be persuaded to use within the Watts community, and not to dissipate elsewhere in Los Angeles.
3. Replacement housing—The state legislature passed a law allowing the Division of Highways to acquire and condemn vacant land for the development of replacement housing. A majority of those to be displaced by the expressway were living in single-family, owner-occupied housing. These constituted a stable element in the community that wanted to remain in Watts. By means of the new law, it became possible to offer replacement housing in the same area to these people.

In the case of Chicago's Crosstown Expressway (described by Milton Pikarsky), three different, yet related, principles dominated planning:

1. Minimizing disruptions through innovative design—The design groups charged with planning the Crosstown Expressway worked conscientiously to reduce dislocation and other adverse impacts. Alternative and highly innovative designs were rated against their effects on the things people value. A new design, separating northbound and southbound Expressway lanes by ¼ mile, was found to be the least disruptive.
2. Use of the Expressway as a means for community improvement—The Expressway was concieved as the "backbone" for a series of community improvements—18 in all. These included new circulation patterns, parks, industrial areas, shopping areas, and the like. The improvements clearly were indirect compensations given to offset adverse impacts of the proposed Expressway, and it was evident that a broad set of resources of the city would be mobilized to provide them.

3. Extensive information programs—Very strong efforts were made to communicate the plan to residents, businesses, and organizations of all types in the affected area. This was mainly at the end of the project. However, at the beginning, as Pikarsky writes, the design staff was required "to know the communities they were serving," and this too is a kind of information program.

The common threads that weave through these two cases are those of (a) acute awareness of both the problems and the potential of expressway construction; (b) an awareness of the existence of valuation sets of communities; (c) a willingness to innovate, either by changing present laws or through design and at additional cost, if necessary; and (d) a willingness to talk to and work with the people involved. The technical requirements of expressway design were not sacrificed in either case, and through cooperative efforts and citizen involvement, community approval was obtained in both cases.

Following the case studies, other papers and presentations were given that suggested means of improving our general level of ability to deal with transportation and community values. Mancur Olson's paper described the potential of using social indicators in the transportation planning process. Samuel Mantel suggested a greater use of operations research methodology. Two reports were received on the progress of work on "The Impact of Highways Upon Environmental Values," a research project sponsored by the National Cooperative Highway Research Program.

The second series of workshops (Feldt, Schofer, Breuning, Rubin, Jacobs, Shiatte, and Roberts, Chairmen) were asked to direct their attention toward means of resolving conflicts and improving the planning process. The conferees had heard the prepared papers and the two case studies. Some of these papers, and especially those of Ylvisaker and Altshuler, contained specific recommendations. The case studies themselves, of course, were examples of actions taken to reduce conflicts between communities and transportation facilities.

The reports of these workshops indicated a large degree of unanimity about the kinds of actions that should be taken to reduce conflicts and to improve planning for transportation as it relates to community values. These reports, therefore, formed the basis upon which a set of recommendations was developed. These recommendations, printed elsewhere in this report, have been carefully reviewed and revised by the Conference Committee, and in the Committee's view they constitute an accurate appraisal of the sense of the Airlie Conference.

CONCLUSION

In looking back over the materials and presentations of the Conference, three main impressions stand out.

First, there is a widespread agreement that the rigid barriers that once separated transportation projects—physically, administratively, and during planning—from the remainder of the city are gone. The improvement of transportation and the improvement of urban communities must go hand in hand. Equally clearly, coordinate improvements are not just the responsibility of transportation people, but of other urban specialists and public administrators as well.

Second, transportation improvements have been caught up in the entire urban crisis. Difficulties faced in building new transportation facilities are, in some degree, magnified by other urban problems such as housing, inadequate financial resources, and minority tensions. Only as these other problems are reduced will it become easier to reshape the city, including transportation components, into a desirable form.

Third, when we think about values, we must first think about people. There is a great need to develop objective and scientific methods of organizing our understanding of people's valuing processes. But at the same time, deliberate efforts must be made to open up channels for a two-way flow of information between people and those who bear the responsibility for planning large-scale public improvements.

ACKNOWLEDGMENTS

The author wishes to acknowledge gratefully the advice and contributions given in the reviews of this paper by the Conference Committee, Frederick T. Aschman, Chairman, and also the assistance and insights offered by Frederick F. Frye and Betty Goldstein. Mr. Frye worked with the author throughout the term of this project.

REFERENCES

1. Guidelines for Action. Report of the Sagamore Conference on Highways and Urban Development, 1958.
2. Highways and Urban Development. Report on the Second National Conference on Highways and Urban Development, 1965.

Recommendations

There are two sets of recommendations. The first set is based on a recognition that it is impossible to separate the difficulties transportation facilities have faced from the severe problems facing urban areas today. The second set suggests ways in which transportation agencies can more effectively cope directly with the problems of community values.

GENERAL RECOMMENDATIONS

From the Conference deliberations it became clear that the problems resulting from the construction of new transportation facilities in urban areas cannot be separated from the other problems facing American urban centers. These other problems include the need for greater equality of opportunity for the poor and for minority groups, the need for better housing, the need for more effective planning and improvement of the urban environment, and the need for greater financial support for urban areas and particularly the central cities. The intensity of all urban problems is one of the causes of the specific difficulties surrounding the construction of transportation facilities. If racial problems did not exist, if there were adequate replacement housing, and if other urban problems were less intense, then transportation facilities could be built with less hardship both to individuals and to the entire urban community.

Therefore, the following recommendations are set forth:

1. The construction and renewal of housing should be greatly expanded so that pressures on older housing, especially in the central city, can be reduced, thereby easing the relocation problems that have impeded transportation and other public improvements.
2. The construction of new housing should be planned in conjunction with schools, work-places, shopping centers, and other facilities, and such new urban development should be carefully integrated with the development of efficient metropolitan and regional transportation systems. The dual objective should be to provide an environment for living matching our national aspirations while not further compounding present transportation problems.
3. Research should be undertaken to build a greater understanding of the interactions between housing, transportation, migration, household income, and community structure, on the one hand, and regional development, social problems, and the systems of production and distribution, on the other, so that governments will be better able to anticipate changes, to evaluate those changes, to prepare adequate plans, and to take appropriate action.
4. Institutional arrangements and governmental organization should be examined to provide more effective and responsive development and implementation of plans and programs.

TRANSPORTATION PLANNING RECOMMENDATIONS

1. Through all stages of the planning process it must be recognized that residents of communities through which new transportation facilities must pass may have strongly held views (sets of evaluations) on the environmental and social effects of transportation facilities. Residents of these communities have social needs, physical environmental needs, access needs, and economic needs. Concern for these needs and an awareness of their varying importance in each community being affected must be a prime responsibility of the transportation official.
2. Transportation planners should recognize that the things people value are not only affected by the physical design or location of transportation facilities, but are also affected by the process of working with people in such matters as route location, plan-

ning, and housing relocation. Working with people and gaining their effective participation in the planning process are means whereby people obtain valued things such as identity, a measure of influence, and a sense of community.

3. In reaching compromises on difficult decisions between the needs of communities and the needs of metropolitan areas, states, and the nation, the transportation official should seek and rely on the support and assistance of duly constituted elected officials. In many conflicts there are no formulas for arbitration. The political process, by nature an arbitration process, has a contribution to make in this regard.

4. In all planning, greatly improved communications are needed to provide accurate exchanges of information about the things that people value, including the valued features of a transportation program. This information can then be used to mold a more effective and responsive transportation program. Improved communications may take a variety of forms, including (a) direct conversations between agency professionals and representatives of a community; (b) public hearings organized specifically to encourage orderly, two-way communications; (c) participation by local residents in the selection of route locations within corridors, in the relocation process, and in other phases of planning; and (d) innovative applications of techniques to identify and measure community values. The long-range benefits for transportation and for community development resulting from improved communications are well worth the short-term costs and delays often required to develop plans that are fully responsive to community values.

5. It is recognized that the burden of relocation falls most heavily on those who are least able to bear it, especially the small home-owner, moderate- and low-income tenants, the aged and infirm, and the marginal businessman; equitable and adequate compensation is necessary for those required to relocate as a result of the construction of transportation facilities. The 1968 Highway Act has gone far in providing for adequate compensation, but it is essential that this legislation be fully implemented and well administered, especially in finding adequate relocation housing for the poor and for minority groups.

6. It is recommended that the processes of selecting a location for and designing a new transportation facility within a corridor in urban areas be combined with the planning of residential, commercial, industrial, institutional, and recreational areas, and circulation systems within the entire corridor. A multi-disciplinary approach should be employed regularly in transportation planning, and the capacity and role of comprehensive planning agencies in planning the corridors through which transportation facilities pass should be strengthened.

7. Recognizing the variety of problems existing in transportation corridors and the need to use the occasion of the construction of transportation facilities for corridor betterment, it is recommended that opportunities for flexible and innovative design be seized upon wherever they can reduce the impact of transportation facilities and improve urban development. New expressway designs, new building types, new landscaping and structure design, the use of air rights, and combining programs of housing, parks, and public buildings construction with transportation facility construction should all be considered as potential means of urban improvement. Wherever possible, the action of buying land for and building transportation facilities should be used to generate additional benefits for the communities involved. Examples of such secondary benefits are increasing employment opportunities, providing excess land for parks and playgrounds, and obtaining improvements in other government facilities and services.

8. A series of regional seminars should be held and in-service training instituted to convey as widely as possible to both professionals and citizen leaders the kind of experience gained at the Airlie Conference—specifically, an appreciation of the problems and value-systems of persons in other groups. Educational programs preparing professionals to work with transportation and community development programs should explore avenues for making those professionals aware of the community needs of the type expressed at this Conference.

9. A carefully planned and coordinated research effort should be instituted to explore selected areas in the field of evaluation processes as related to transportation facilities. Suggested area and topics of research might include (a) case studies of the effects of transportation construction on communities and the things they value, including an evaluation of alternative strategies, tactics, and designs; (b) a study of means by which public hearings can serve more effectively for two-way communications between the public and transportation agencies; (c) a study to determine more effective methods of communication between agencies and communities with the objective of preparing a manual or report suggesting how agency and community communications might be improved; (d) studies leading to the application and improvement of techniques for quantifying the community values that are now known only qualitatively; and (e) studies of organizational strategies for the conduct of transportation planning in coordination with other urban planning, including consideration of incorporating values in the planning process.

Part II
Opening Statements

The opening statements presented by Messrs. Carey, Holmes, and Hearing define the problems of values as seen by the sponsors of the Conference, and give a history of the evolution of the Conference.

Opening Remarks

W. N. CAREY, JR., Executive Director, Highway Research Board

It gives me a great deal of pleasure to welcome you to this Conference on behalf of the Highway Research Board and the National Academies of Sciences and Engineering. I wish to compliment Mr. Aschman and the members of his advisory committee for their effective work over the past year in planning and developing this Conference. These men worked long hours, without compensation. I would also like to recognize the outstanding work of the Board's consultant on this Conference, Mr. Roger Creighton, and of our staff Urban Planner, Jim Scott.

Although this Conference is being held under the auspices of the Highway Research Board, it would not have been possible without the support and cooperation of the sponsors—the U.S. Department of Transportation, in particular the Bureau of Public Roads, and the U.S. Department of Housing and Urban Development. I would also like to thank the speakers, panelists, and workshop leaders who have prepared papers and discussions for this Conference. It is quite obvious that they hold the key to the success of this endeavor.

Each of the participants of this Conference received a personal invitation to attend. Therefore, we consider this a highly select group of individuals who not only have an interest in the subject matter, but each of whom also has a unique contribution to make. The participants represent many different kinds of organizations as well as a wide range of disciplines and backgrounds. We have engineers, architects, planners, sociologists, geographers, anthropologists, economists, and, importantly, representatives of citizen groups from various urban communities. Let me add that we feel this type of representation is essential for a successful treatment of the complex subject being discussed here. We hope this "marriage" of disciplines will bring forth meaningful interactions among all conference participants. All have contributions to make and we hope that you will find the experience rewarding as well.

For many of you this is your first contact with the Highway Research Board. A special welcome to you! I hope it will whet your appetite—that you will find it worthwhile to join the 2500 or so men who serve regularly on our committees and panels. Descriptive pamphlets about the Board are in the packet you received on registering. Perhaps you will read them at your leisure.

Briefly, the Highway Research Board is a unit of the Division of Engineering of the National Research Council, serving the century-old National Academy of Sciences and the relatively new National Academy of Engineering. This is a non-governmental organization established to advise and assist the government and others in the scientific community on all matters of science and technology. The Highway Research Board itself is supported by the state highway departments, the Bureau of Public Roads, and by a large number of industries and associations and thousands of individuals all over the world. Fundamental policy is determined by a 25-man Executive Committee representing the highway transportation community. The Board administers for the state highway departments a $3.5 million annual program of contract research in the transportation field. Although the Board conducts in-house research for special sponsors, usually governmental, its traditional functions over the past 48 years involve stimulation and correlation of research and the dissemination of information across a wide spectrum of transportation-oriented subject matter. The Board holds an annual meeting each January in Washington at which over 3000 registrants hear some 300 technical papers in the field.

Some 2500 individuals from government, industry, universities, and consulting firms serve on about 150 committees and panels on a continuing basis. We publish over 10,000 pages of technical literature each year. We maintain an extensive computer-based

information storage and retrieval system for highway transportation research. This storehouse contains descriptions of over 7000 ongoing research projects throughout the world and very comprehensive coverage of transportation research literature.

For its first 40 years the Highway Research Board was concerned almost exclusively with highways. In the past 10 years it has been increasingly apparent that there is little in highway research that does not interact or interface with other modes of transportation and with the community that transportation is designed to serve. This broadened base has been recognized by our sponsors. The Board is undergoing a reorganization of its departmental and committee structure that will result in a three-sided structure for its major activities. First, there will be a group concerned with transportation systems planning and administration; second, a group involved with design and construction of transportation facilities; and third, a group dealing with operation and maintenance of facilities. This Conference resulted from deliberation of Group 1 on Systems Planning and Administration and in particular its Committees on Community Values.

The Highway Research Board has no empires to build. It takes no position in policy matters. It is interested only in the development and dissemination of facts that can be used as the basis for objective formulation of policy by others. Therefore, the Board serves as an ideal forum where men from disparate interests can get together in an atmosphere of objectivity. Individuals are invited to participate in our work because of their personal competence and background—not because they represent any certain interest group. This may be one of our most important reasons for being in these days of increasingly complicated intergovernmental relationships and of suspicion and mistrust among the various professions and industries. In this atmosphere we can all work together.

Before closing I have a few words relating to this Conference on Transportation and Community Values. The idea and concept of such a Conference as a Board function can be directly traced to a special advisory committee chaired by E. H. Holmes that was established by the Board's Department of Urban Transportation Planning in 1966. This committee determined that a Conference was desirable, and as a result the initial planning was begun by Jim Scott of our staff working with our standing Community Values Committee. The Chairman of this committee, Mr. Peter Lewis (former Deputy Undersecretary for Metropolitan Development, HUD, and Assistant Director of the Bureau of the Budget), was a prime mover in the staging of this Conference.

I would like to refer briefly to a few of the major points expressed in the special advisory committee (Holmes) report because I feel they serve to pinpoint the challenge we face. The report stated in part:

1. There appears to be a lack of knowledge concerning socioeconomic values as inputs to various system analysis techniques being evolved and aimed primarily at the solution of urban problems.
2. There are many unknowns concerning the effects of the transportation system on the environmental aspects of city growth and structure.
3. The values in any community development program have yet to be identified, let alone quantified.
4. The problem of scales in considering value impacts is part and parcel of the total value question.
5. The whole value question is much broader than transportation alone. The value question has a rather wide impact on all aspects of community development, only one element of which is transportation.
6. The testing or questioning of various value assumptions as inputs to the planning process and their resultant impacts on community development is a subject matter that needs greater clarification through discussion and research.

These are only a few of the major points expressed in the Holmes report. He may wish to emphasize others; nonetheless, I feel that these present a rather formidable challenge.

Let me add, however, so that there will be no misunderstanding by the group gathered here, that the Board does not claim to be the only organization that conceived of such a

conference on transportation and community values. Other organizations—for example, the Bureau of Public Roads—had been developing plans for a national conference on this subject prior to the Board's entry into the field. The important thing is that we are here to get it off the ground.

I should also point out that there have already been major efforts that have recognized the need for a greater understanding of community values. The Bureau of Public Roads and several state highway departments have, over the past years, become increasingly involved in research and planning activities relating to the proper place of transportation, especially highways, in the urban environment. The 1962 Federal-Aid Highway Act, as a matter of fact, not only required the establishment of a comprehensive framework for urban transportation, but also recognized as one of the basic planning elements the social and community value area.

This concern for community values was further reflected in the Williamsburg Conference of 1965, which generated the "Williamsburg Resolves" that I am sure are familiar to all of you. Another milestone was the presentation by Frank Turner of the Bureau of Public Roads in 1966 of the concept of "Joint Development," under which the joint provision of transportation facilities and of other urban facilities is linked together in the rebuilding of our communities. Many of you attended the Highway Research Board Conference on Joint Development and Multiple Use of Transportation Rights of Way last fall. This highly successful conference evoked a great deal of discussion on how to better integrate transportation facilities in the urban environment.

Research work on this subject is currently under way in many quarters, including various government agencies and the academic community as well. For example, this conference will hear two reports from the researchers on the National Cooperative Highway Research Program project on "Highway Impact on the Urban Environment."

Finally, let me say that we do not anticipate that all the questions will be resolved in the short time that we are assembled here. Our major hope is that through your participation and interaction we might add yet another milestone in the interest of better planning, so that the transportation systems of tomorrow can be truly assets to our urban communities. Our challenge here is most difficult. These matters are in many cases subject to a great deal of emotionalism. Hopefully, we can be objective and yet participate fully so as to take advantage of the opportunity for interaction that has been provided by bringing you together.

Opening Remarks

E. H. HOLMES, Director of Policy Planning, Federal Highway Administration

At the outset let me disclaim any thought that these remarks necessarily reflect the views of the Department of Transportation in its broad areas of responsibility, as the program suggests. Rather, they will be directed toward the relationship between ground transportation and community values, and still more narrowly approached from the viewpoint of the Federal Highway Administration. First, it is hardly appropriate for me to speak in behalf of other modes of transportation and, second, the reason I am occupying this spot on the program is to explain why FHWA (from the Bureau of Public Roads budget) is one of the two sponsors of the conference.

We are seeking two specific results. First is a statement of the present state of the art of relating community values to one another with emphasis on transportation. In descending order of their desires, transportation administrators probably would like to be able to quantify community values neatly in monetary terms, or if not that, to quantify them in other terms, or relate them to one another, or define them, or if nothing better, at least to describe them. Hopefully the knowledge brought to this room can be pulled together to provide the Administrator with usable measures for appraising the effects on the communities of alternate transportation proposals.

Second, we hope the Conference can conclude what areas of research promise to be most productive in improving the capability of the highway or other transportation authorities to carry out their programs in such a way as to provide the maximum in value for the whole community. If this second purpose implies that we are not too sanguine that at its present level the art can now produce all that is desired, it is only because as of now we have to believe that is the case. So we have these two main purposes in helping to support this effort.

This Conference has been on the way for some time, and since I was involved in the laying of the keel, I am particularly glad to be able to be here at its launching. Somewhat more than two years ago the Bureau of Public Roads began to plan a very large research program in the area of social and community values as they relate to transportation. It was to be undertaken in stages, the first of which would be an appraisal of the current state of the art. At about the same time the Urban Transportation Department of the Highway Research Board was seeking means to encourage research in the general area of community values, with the expectation that the first step would be to define the most effective directions the research might follow. The Board and the Bureau saw the advantage in merging our efforts in the first step, and found the Department of Housing and Urban Development willing and able to join in.

Hence this Conference. For a number of reasons, principally budgetary, the launching, both of the Conference and the Bureau's program, has been delayed. But finally tonight we are knocking out the chocks and we all are about to be immersed in the uncertain and troubled waters of transportation and community values.

The concern of the highway professionals with the impact of the highway on community development, and vice versa, dates back many years before preparations for this Conference began, however. That concern was formally and quite prominently expressed in the National Conference on Highways and Urban Development, the Sagamore Conference, in 1958, sponsored by the American Association of State Highway Officials and the Urban Research Committee of the Highway Research Board, the predecessor of the Urban Transportation Department of the Board.

In a series of findings and recommendations, the first finding was the following:

> It is essential that all units of government cooperate fully in meeting the urgent needs for highway improvement involving the planning, designing, and

> operation of facilities, so as to provide optimum transportation service and accomplish the orderly and proper development of our urban communities.

And among the recommendations appeared the following sentence:

> To provide the basis for transportation planning and broad community planning, all agencies concerned should promptly undertake studies to develop the necessary basic facts, using appropriate techniques.

These expressions of agreement among highway administrators, local officials, planners, and other professionals may not in 1969 seem to be a strong assertion of the importance in highway planning of what we now call community values. But surely it was a recognition then of a current and growing problem and an expression of a determination to do something about it.

Gaining an understanding of community values was not easy—far more difficult than the Sagamore conferees probably thought. "Appropriate techniques" did not seem to appear and the "basic facts" still seem to escape us. But progress was made. Transportation officials did begin to pay more deliberate attention to local problems and desires, and increasing numbers of officials and community leaders are recognizing the interrelationship between transportation and other community values. Note that I have put the word "other" in front of community values.

As time has gone on since the Sagamore Conference, the urban transportation planning process that got its real start at Sagamore has developed a much closer rapport between state and local officials. With it the awareness of the necessity and problem of weaving transportation into the fabric of the community has become widespread. But the techniques and facts envisioned at Sagamore seemingly are as elusive as ever. To take another sighting on the state of the art and again to bring together the people and groups most concerned, the American Association of State Highway Officials, the National Association of Counties, and the National League of Cities sponsored the Second National Conference on Urban Transportation, the Williamsburg Conference, in 1965. Many of those present were there, and it is recent enough at least to be recalled by many who were not.

The Williamsburg Conference revealed the great distance traveled since Sagamore, and clearly emphasized what I have already alluded to—that despite considerable advances in the art we still did not know with satisfying precision how to relate community values to one another. Both in planning the conference and during its course the best efforts of the steering committee were directed toward finding within the art the means by which transportation officials could work into their planning in a realistic way consideration of the community values related to or affected by their programs. Either the art had not advanced very far since Sagamore, or the committee failed to locate the artists. The conference did accomplish a great deal, however, in finding broad areas of agreement among diverse groups, as expressed in the ten Williamsburg Resolves—1965, not 1775, version. To me the most significant is Resolve No. 3, which reads as follows:

> The planning and development of facilities to move people and goods in urban areas must be directed toward raising urban standards and enhancing the aggregate of community values, both quantifiable and subjective; it should be recognized that transportation values (safety, comfort, beauty, convenience, and economy in transportation) are a part of, and are to be given proper weight in, the total set of community values.

We must start from the base that transportation is itself a community value.

While these and other convocations were being held, highway officials were doing their best to find a way to work community values into their benefit-cost equations. Over the years engineers had developed the benefit-cost concept and had improved their ability to measure road-user costs and benefits. They had learned pretty well the advantages, and perhaps more important, the limitations of their use. It was only natural

that they turned first toward the development of new terms to add to the equations—terms representing the newly recognized community and other non-user effects, hopefully quantifiable in monetary values. These attempts led uniformly to disappointment, as did some fairly extensive and expensive research efforts financed through highway funds. It is, I think, now generally concluded in the highway field that while some community values can be quantified, and some even in monetary terms, there are more that cannot. And unfortunately those that seemed to be possible for expression only in emotional terms have in some cases become decisive in transportation determinations. The fact that the mobility the transportation facility provides is in itself a community value, and perhaps more important to the whole community than any other, is forgotten or pushed far into the background.

Disappointment is not despair, however, and we highway types are still optimistic that ways may be found to rack up all community values, including transportation, in some reasonable order and perhaps to find ways to equate some against others in the context of specific program or project proposals. No researcher to my knowledge has concluded that there are not ways to rate some values against others before a backdrop of an overall long-range goal or a more immediate objective, even though he cannot find it possible to do that in monetary terms. And the research has stimulated other studies of various types, especially new economic approaches to impact analysis. Then, too, the urban transportation planning studies have opened up new approaches to determining community goals, understanding public attitudes, and exploring alternatives, such as, for example, the joint development concepts.

In considering the whole question of transportation and other community values—and "other" is my word again—we must do so in the broad perspective of the future. We cannot overlook that in many cases—and this is the rule rather than the exception—highways and other transportation facilities have been located, designed, and operated in harmony with their environment and have in fact enhanced it and the community at large. The fewer and far more spectacular cases that bring undesired effects, the ones that attract most widespread attention, are most often in presently built-up areas in which any substantial public improvement brings dislocation and environmental change. And here we come head-on into a confrontation between regional and local goals and objectives.

Conflict between goals is inevitable. Regional goals, such as better transportation for the whole community, come in conflict with local and neighborhood goals, which may perfectly well be simply left alone. Public goals often cannot avoid conflict with private goals. And even private or personal goals vary with the circumstance. A person is a road-user when he uses the road, but at other times he includes himself in that great amorphous group known as non-users. He rides with no compunction over a freeway that displaced some anonymous persons or businesses to get to a hearing to protest against a project that threatens to displace him. Trade-offs in values are a part of life, public and personal, and consciously or subconsciously we all constantly trade one value for another as life goes on. And trade-offs between transportation and other community values are and will be a part of life.

The transportation official needs help in responding to these differing, very real, and sometimes very personal values, goals, and objectives. He has too often, especially in the more widely publicized cases, been left pretty much by himself on the defensive. He needs and deserves help, and that is what the Federal Highway Administration seeks in his behalf from this Conference.

But we must recognize that the problems that now loom so prominent may not in the long run be the most important, however urgent their solution may be. With the completion of the Interstate System there will not be many more occasions to need to push highways through highly developed areas, particularly in or near the downtown areas. The challenge and great opportunity ahead will relate to the miles of freeway and other highways, and of other modes of transportation, in the developing areas surrounding our expanding metropolitan areas, great and small, where before the century's end we shall be building as much that is new as we have built to date since we became a nation. We must avoid today the works and policies that will simply repeat today's problems tomorrow. If we could understand and gain wide public acceptance of our goals for

living, and exercise sensible control of the use of the land to achieve those goals as our metropolitan areas grow, our problems in transportation to serve those goals would become simple indeed. In the long run the solution of "the transportation problem" might lie outside rather than within the field of transportation itself.

To conclude, I would like to return to Williamsburg, to a statement made by Kenneth Brooks, then Chairman of the Committee on Urban Design of the American Institute of Architects. As the conference came to an end, he wrote:

> The engineers of this nation in this year of 1965 are to be highly commended for their creation of excellence in highway design. These are called standards. This search for high standards has been fulfilled.
>
> It is the nature of the engineer to be satisfied with nothing short of perfection. Therefore, it can be predicted that the next mission of the engineering disciplines will be the search for excellence in highway urban design. They may well invite their colleagues of the environmental disciplines to help in the search.

Ken Brooks, wherever you are, you were right. We have sought out our colleagues.

Transportation Can No Longer Be Planned in Isolation

VINCENT J. HEARING, Acting Director,
Office of Urban Transportation Development and Liaison

I would like to make several comments and express several hopes that I have for this Conference. Obviously, you share our concern for transportation in community values. Your very presence speaks for that. The problem, as I see it, is how to reach those people who are not here, and yet who have the authority to design and make decisions on transportation systems being built in our cities and to be built over the coming years. We have to find a way, somehow, to make them understand these values—to identify them and to quantify or express them so that they can be taken into consideration in transportation decisions.

We have already had enough motherhood statements and generalities that everyone agrees with but no one does anything about. I am not minimizing the difficulty that is inherent in the problem of expressing community values and somehow translating those values into useful factors that can be employed in decision equations. But I also recognize that we are in a period now of tremendous change and tremendous development. We have the atom; we have space; we have computers; we have sophisiticated communication; and even religious structures are going through dramatic changes. On the social side, change is clearly before us.

I am convinced that somehow these community values are going to have to be identified and expressed and I think this can be done. Not only can it be done, but it must be done. While the purpose of any transportation system is to provide mobility, it must also contribute to the fulfillment of community goals and desires. Our transportation systems, and I am using the term collectively for both highway and mass transit, offer a dynamic tool for achieving and serving a broad range of social, economic, and physical desires of communities. However, they can be just as dynamic a deterrent to such achievements if they are conceived and designed without adequate consideration of community values.

Since 1956, as we all know, we have built most of our 42,000-mile system in sparsely populated, predominately rural areas. But, construction is increasingly shifting into the urban areas. About 6000 miles of the remaining system will involve construction in the urban areas, and these are 6000 critical miles. They directly affect a multitude of land uses—housing, shops, parks—and many kinds of people ranging from businessmen to churchmen to workers and property owners. They involve the investment of billions of dollars and the hopes and lifetime ambitions of communities, and the people who live in them. These transportation systems affect the very quality of life and what our cities will be in the future.

Our transportation planning, in my judgment, has been much too narrow. We have sought to plan and design technically and economically efficient systems, but they have been predominately focused on the user. We know our urban record has not been particularly good. We also know that we face, in the coming years, the investment of billions of dollars in transportation. I am convinced that we can do better. However, to do this we have to expand our range of vision. We must plan and design systems that are not only good in themselves but that advance and promote orderly development and the quality of life. Transportation can be a positive device for elevating the quality of our urban environment, but—and this is a big but—it can only be done if we recognize this and use it in this way. Certainly users must be served, but so also must the people who live in those communities. We have learned what we do not want to do; now we must make known what we want. And, somehow we must express these values in such a way that they can be taken into account during the decision-making process and the planning process for transportation.

My hope is that this Conference will give expression to these values and in a way that they can be useful. Perhaps it will be just a start, perhaps it will lay the groundwork for future research. But, it is a positive and, I hope, affirmative step forward.

Part III
Valuation as a Process

A necessary first task of the Conference was to arrive at a basic understanding of values—what they are and how they are formed. In his paper, Professor Boulding defines valuation as a process, a rating action in which people express, verbally or by actions, their preferences between alternatives.

The Formation of Values as a Process in Human Learning

KENNETH E. BOULDING, Institute of Behavioral Science, University of Colorado

One of the unfortunate consequences of speaking an Indo-Aryan language is that we tend to turn things into nouns that really should be verbs, according to the famous Whorfian hypothesis. Thus, the "it" in the expression "It is raining" is a beautiful example of a nonexistent noun or pronoun forced upon us by the structure of the English sentence. The word for "values" used as a plural noun may be another example of a group of virtually nonexistent objects that stands as a grammatical substitute for what is essentially a process. Consider, for instance, the two sentences, "I value you highly," and "You have a high value to me." In terms of meaning, these are almost exactly equivalent, yet the first is much more accurate as a description of what is going on. When value is used as a verb, as in the first sentence, it is clear that it represents something that somebody is doing. When it is used as a noun, as in the second sentence, it seems to suggest a quality that is intrinsic in the object. A search for nonexistent intrinsic values inherent in the commodity object plagued the classical economists for a hundred years, until the ghost was finally laid to rest by Jevons and the marginal utility school.

Valuation can express itself either in verbal statements or in actual choices and behavior. I may make the verbal statement, "I value you highly," but if I will not inconvenience myself to the slightest degree in order to add to your welfare the statement may rightly be suspect. Economists have laid a good deal of stress on what they call "revealed preference," which is what one may deduce about people's preferences, that is, values, from their behavior. We may, however, be justified in speaking of "values" as a noun in terms of the description of a state or condition of preference on the part of an individual or even an organization or other unit of choice. Economists since Pareto have defined preferences in terms of indifference curves or, more generally, in terms of a utility or welfare function, which relates the state of the individual in his environment to some measure of his well-being or welfare. Thus, suppose we have a field that consists of combinations of two elements of choice, A and B, measuring A vertically and B horizontally. Then on Cartesian coordinates we can draw the contours of a welfare or utility function, as in Figure 1. This may be visualized as a mountain rising above the plane of the paper. It may have a summit at S, which represents a point of satiation of both the elements A and B beyond which they become "bads" rather than "goods". Each of the contours of the welfare surface is an indifference curve that is the set of all points in the field representing the same level of welfare or well-being. A whole welfare function represents a "value system" and may quite properly be thought of as a property of the person, group, or organization that it describes.

Within a given value system, such as is shown in Figure 1, the value, whether absolute or relative, placed on either of the elements A and B depends entirely on where we are in the field. From any point in the field the absolute value of an element may be defined as the increase in welfare or utility that would result from a unit increase in the element itself. Thus, suppose we start at the point L with an amount OL of B and zero of A and increase the amount of A. Between L and M, welfare increases, that is, A has a positive value. At M, a small increase in A produces no change in welfare and beyond M, as we move from, say, M to N an increase in A results in a decline in welfare; A then has a negative value or is perceived as a "bad". Similarly, as we increase the amount of B along PQR, between P and Q welfare increases with an increase in B, beyound Q it diminishes.

The relative value of, say, A in terms of B is measured by the slope of the indifference curve at any point, or between any two points. Thus, between the points E and F, which are on the same indifference curve, A is highly valued relative to B. This is

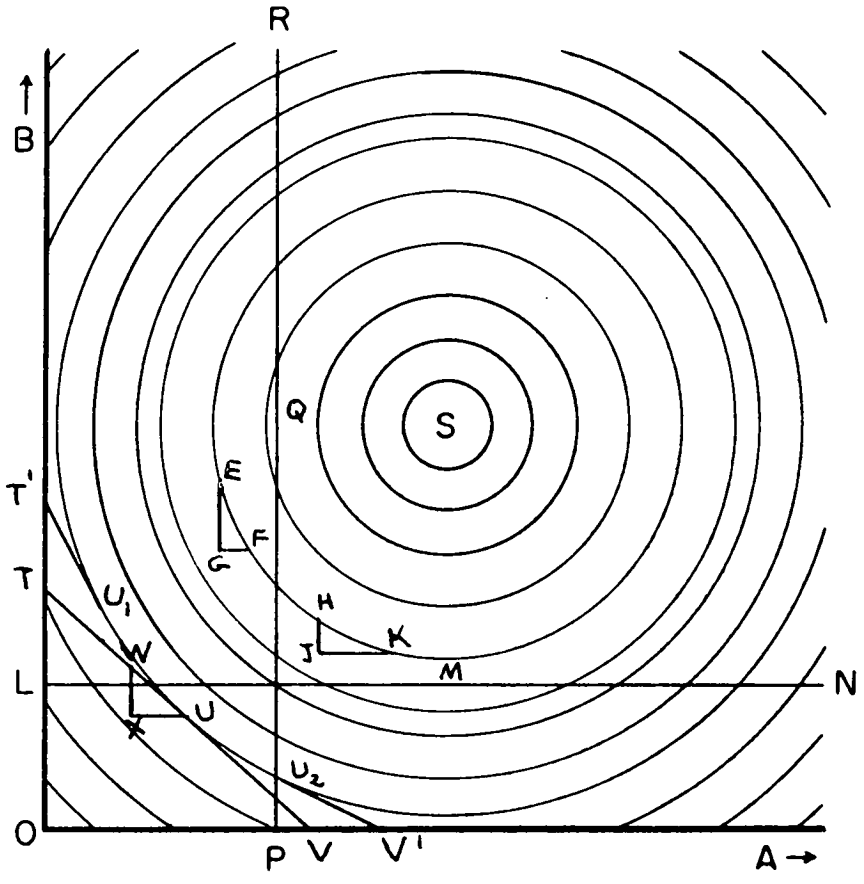

Figure 1.

reflected in the fact that we would be willing to give up a large amount of B (EG) in order to get a small amount of A (GF) and still be just as well off as we were before. By contrast, between H and K, B is valued highly and A not so highly, as reflected in the fact that we will want a lot of A, equal to JK, in order to compensate us for the loss of a little B (HJ). Thus, we do not have a single "value" for either A or B; what we always have is a value system that consists of different values for A and B depending on how much we have of either of them.

Economists have always insisted that actual choice depended not only on the value system but also on the opportunities that were open. A choice is necessitated when the elements in the set of choices are scarce, in the sense that there is a limitation on the quantities that can be obtained, which prevents the chooser reaching the point of satiety. In the field like Figure 1 this is represented by an opportunity boundary, such as the line TUV. What this means is that all combinations of the elements A and B inside the area OTUV are possible for the chooser, that is, constitute a feasible set, assuming at the moment that A and B cannot take negative values and that all combinations beyond this feasible area are impossible of attainment. Economists generally assume that the chooser maximizes his welfare, that is, the point he actually selects is that represented by the point U, where the possibility boundary touches an indifference curve. The point U has the highest welfare that can be attained in the feasibility area.

The concept of a possibility boundary produces another value concept—that of alternative cost. Alternative cost is the slope of the possibility boundary; thus, between, say, W and U we would have to give up WX of B in order to get XU of A. This is value

in the sense of how much we have to sacrifice of one thing in order to get a unit of another. We might perhaps call it objective value by contrast with the subjective value, which is the slope of the indifference curve. At the point of choice these two are the same, given certain assumptions about the nature of the functions, which may, however, by no means always be true.

One proposition of considerable importance that is frequently overlooked follows immediately from this analysis. It is that under some circumstances, which are by no means implausible, a small change in either the opportunity structure or in the preference structure can produce large changes in the optimum point that is chosen. Choice, in other words, can easily be a highly sensitive system responding to small changes in the parameters by large changes in the equilibrium position. This is particularly likely to be the case if the indifference curves and the opportunity boundaries have approximately the same slope. If, indeed, the opportunity boundary and the indifference curve coincide over a range, the position of choice is indeterminant, that is, we have a "dilemma". We quite literally do not know what to choose and a very slight change may take us to one extreme or another. Thus, suppose in Figure 1 the opportunity boundary was $T'U_1U_2V'$. Choice would be indeterminant between U_1 and U_2 where the opportunity boundary and indifference curve were identical. A feather in the balance might move it from U_1, with a little A and a lot of B, to U_2, with a little B and a lot of A. This principle has great potential for explaining why value systems tend to cluster around what are often widely diverse points. Thus, as between socialist and capitalist countries the actual preferences and opportunities may not differ very much, but a small difference in the underlying conditions produces large differences in the actual choices made.

This economic approach to valuation, although it clarifies certain concepts and develops the possibility of some important propositions, such as the ones just mentioned, nevertheless has serious defects, most of which relate to the absence of any adequate dynamic considerations in the model. The most serious defect is that economists in general simply assume the preference or welfare functions on the one hand and the opportunity functions on the other without further inquiry and particularly without inquiring as to how these functions come into existence. This is what I have called elsewhere the "doctrine of the immaculate conception of the indifference curve." The opportunity functions and the production functions on which they are based are almost equally immaculately conceived without inquiry into their origins. If we are to receive any understanding of the dynamic processes of society this obviously is not good enough, because both value systems—i.e., preference functions and the opportuntity functions that rest on production functions—are learned in a long process of individual and social learning.

Only a very small part of the human value system is genetic in origin, unlike that of the birds and the lower animals whose value system is imparted mainly by their genetic structure. The human comes into the world with certain preferences that are presumably genetically controlled. The baby likes milk, warmth, and mother or some reasonable substitute, and he dislikes hunger, pain, cold, and being wet. On this primitive foundation, the whole elegant structure of human values is learned by a process of information input, output, and feedback. Even sexual preferences seem to be very largely learned, although there are certain potential preferences implicit in the structure of the nervous system. If, however, some people like caviar and red flags, and others like rice and little red books, while still others like hamburgers, French fries, and red, white, and blue, the answer has to be found in the life experience of these people, rather than in their genetic structure. What we know very little about, however, is exactly what elements in the input, output, and feedback history of the individual or society produce what structures in either values or production functions. Production functions perhaps are easier. The Balinese learns how to make batik and how to conduct elaborate and complex interpersonal relations. The American learns how to make automobiles and how to enjoy baseball.

One thing we do know: As people communicate with each other, individual preferences and value systems tend to converge into something that might almost be called a "common value system". A common value system is what defines a culture or a subculture, which consists essentially of a group of people all of whom have rather similar value systems and welfare functions. A common value system almost inevitably

determines an ethical system, which is a common value system in which the value system itself is highly valued, so that people who do not hold it are regarded with suspicion and distaste. Tastes are values about which we can agree to differ. If I like coffee and you like tea, there is no great reason why we should not agree, provided both are available. If two sets of tastes are complementary the case is even better, as with Jack Spratt and his wife. You may recall that Jack Spratt could eat no fat, his wife could eat no lean, and so betwixt the two of them, they licked the platter clean. Tastes that are too similar indeed may lead to conflict, such as the two rival princes who were in complete agreement—they both wanted Milan. On the other hand, with any group of people who are in close communication, these very communications produce conformity in all those things that symbolize membership in the group, whether speech, dress, taste in food, even taste in symbols and ethical principles. We must recognize indeed that in one sense there are no purely individual tastes, just as there are no pure individuals. We are all artifacts of our society. Only those tastes are allowed to the individual that society permits. Any man in our society who has a taste for communism or bigamy, young people who have a taste for pot or LSD, a chemist who has a taste for the phlogiston theory, or an astronomer who has a taste for Ptolemaic theory will soon find that, even in the scientific community, and still more in utopian communities, there are not many tastes that are really private.

The proposition that choice is a highly sensitive system may throw a certain amount of light on how the total structure of preferences developed into cultures and subcultures, i.e., into what might be called "preference clusters". If we could map the value systems or preference structures of all the individuals in the world onto some kind of field, we would find that they would not scatter uniformly around the field but would cluster into value constellations much as the matter in the universe is clustered into stars and the stars into galaxies with large empty spaces between.

The evolutionary model of mutation and selection is perhaps the best one that we have at the moment to interpret the total human learning process, which includes both the learning of value systems and preference functions and also the learning of techniques and production functions. These functions can be thought of as "species" that inhabit the human nervous systems of the world. They propagate by means of communications, i.e., through outputs, inputs, and feedbacks of information, feedback being an input that is perceived as being related to a previous output. As an individual person grows from birth his image of the world or what might be called his "internal universe" continually changes under the impact of information input and output. This is a growth process in the image that is very imperfectly understood. In part it grows by its own internal systematic processes, largely through the generation of internal information inputs in the imagination. In part it grows because of inputs and feedbacks from outside. In this process, dissonances or disappointments are of particular importance. At any one moment we have certain images of the future and as time goes on these are either realized or not realized. If they are realized our general image tends to be confirmed; if they are not realized—if we are disappointed—some revision of the image usually has to be made.

We start off with a genetically constructed value system, with some things having high value (rewards) and others low value (punishments). Our images tend to grow toward the rewards and away from the punishments. However, the value system itself does not remain stationary, but changes as the image develops; that is, we have to learn most of what we regard as rewards and punishments beyond the most obvious physiological level. In particular, we find the approval of those around us rewarding and their disapproval punishing, unless we also learn to put a low value on approval and a high value on disapproval, as may be done at a late stage of development, if the individual rejects the society around him, as some do. Most people, however, do not get to this stage and are socialized into the society in which they grow up, accepting its preference structures and learning its technology. We thus see the process of socialization as something like the reproduction of the gene in biological evolution, by which images, value systems, preference functions, and so on are transmitted from one person to another by a process of simple reproduction, so that the children grow up with much the same value systems as the parents. This is not wholly dissimilar from the process by

which genes reproduce by a kind of three-dimensional printing. In social evolution, however, printing is much less accurate and much more subject to change in transmission. The value systems of children may be very much like that of their parents, but they will rarely be identical and sometimes they may be drastically different.

If we are to understand the processes by which value systems change, we have to look at the phenomenon of social mutation. This consists of the development of images in the mind of a single individual that are different from those around him. This happens presumably because of the internal processes of growth in the image within the individual, and represents in a sense an alternative method of reducing dissonance. If there is dissonance between the incoming messages and the existing image, this may be reduced in at least two ways. We may deny the validity of the messages or we may deny the validity of the existing image and reorganize it. Consider, for instance, the case of a young person who has grown up in a small sect, hearing nothing but the doctrines and the value systems of the sect, who then goes out into the world—to college, for example—and finds himself exposed to a whole set of communications that are dissonant with his values. He may reject these communications as invalid and remain with the sect, or he may decide that the previous communications and images are invalid and may undergo a radical restructuring of his image of the world and his whole value system. Another possible reaction to dissonance is compartmentalization, that is, having one value system for one part of life and another for another. The more complex the society, the more compartmentalization is likely to take place, simply because of the differentiation of roles. The value system that man professes and even practices on Sunday may not be the same as that which he obeys on Monday. The value system that man employs in his professional life may not be that which he employs in his political life. Scientists, for instance, have been known to be quite unscientific when they go into politics.

The situation is further complicated by the fact that in social systems communications do not merely flow from one individual to another, but are dispersed over large numbers of people through mass media. The communications system is not even confined to the present time. We have a very large volume of communications with the dead through their artifacts and especially through their books, their paintings, and other semi-permanent means of communications. A great deal of what happens to a student in college is communication from times past, that is, from the dead. One sees, for instance, the enormous impact of books like the Bible, the last author of which died almost 2,000 years ago. We also have an increasing amount of communication through the mass media, the newspapers, radio, television, and so on by which messages from one person will reach millions of others. In spite of this mass communication, however, face-to-face dialogue, or what might be called "double feedback," is of enormous importance in the formation of value systems. Feedback is one of the most important sources of credibility and, in the case of the mass media, feedback is very remote. Indeed, a conversation that begins "What did you think of the TV show last night?" may have much more impact in changing value systems than the show itself.

Social evolution exhibits much more instability than biological evolution and hence is much more difficult to predict. This is particularly so in the case of evolution of value systems, less so perhaps in the case of the evolution of technology. It is extraordinarily hard to identify evolutionary potential in social systems at the time when it appears. This is why history is always surprising to us as it develops. The great mutations and value systems associated, for instance, with the names of the founders of religions, the prophets, and the poets, are virtually impossible to predict in advance, though perhaps we can say something about what it is that gives them survival value. We look, however, at the impact of individuals like Jesus, Mohammed, and Marx; we see the enormous importance of individuals who become exemplars and who may set a process of reproduction of value systems in the minds of men that profoundly changes the whole social structure. It is hard to see, for instance, how anything in the information system of the Roman Empire could have alerted Tiberius to the fact that in an obscure prophet of humble origins in a small corner of his empire was going to set in motion such an extraordinary chain of events. Similarly, who would have thought that a wild old scholar with a beard in the British museum in the mid-nineteenth century

would have had such an impact on the twentieth. Those who will be the prophets of the twenty-first and twenty-second centuries are likely to be hard to identify now.

In the evolution of value systems, the development of organizations, and the skills of organizations, and especially organizations that are specialized in propagation of value systems, clearly play an important role. One thinks particularly of such organizations as churches, political organizations—especially the national states and political parties, and economic organizations, such as firms and corporations. For any organization to survive in the great ecological system of the social world it must be able to get inputs from its environment and it must be able to send outputs into its environment, and its capacity to do this depends in considerable measure on the structure of value systems and perferences of that environment. The firm, for instance, that is producing something that nobody wants will soon find itself out of business. Political parties, likewise, whose product falls into disfavor are likely to be voted out of office. A church whose doctrines do not appeal to the people around it will soon disintegrate. It is not surprising, therefore, that all organizations become modifiers of the value environment around them. In the case of the firm this is advertising and selling activity; in the case of the church and the political party and the national state, there is preaching and propaganda, often under the name of education, which is designed to change the value environment around it in favor of the survival of the institution. From the point of view of survival of an organization, the value environment may have several aspects, i.e., what in the first place might be called "simple demand" for the product of the organization. If the product is highly valued in the environment the organization will be able to survive in a market environment provided that the market itself is highly valued and legitimated.

At another level there are value systems in the environment regarding the nature of the organization quite apart from its product. Some organizations are valued for their own sake. We might express the same proposition by saying that organizations have outputs that are not commodity outputs; outputs such as, for instance, identity, security, and those subtle outputs that produce inputs of approbation and identification. This relates to the part of the social system I have called the integrative system, which deals with such matters as status, identify, security, approbation, community, identification, legitimation, love, and so on. The survival of organizations, however, is a very complex business. The corporation that nobody loves may survive by producing goodies; the country or church that nobody loves will probably not survive for very long.

The functional relations involved in the integrative system are very tricky and obscure and exhibit all sorts of nonlinearities and discontinuities. Nevertheless, I am convinced that the dynamics of the integrative system dominate all the other elements in the social system, in the sense, for instance, that if an institution loses legitimacy for whatever reason it has a very poor chance of survival. We get, however, extremely complex systems of both negative and positive feedback, sometimes leading to growth and expansion of particular institutions and syndromes, sometimes leading to decay.

Another very interesting problem in the dynamics of value systems is the interrelationship between technology and values, that is, between the growth of knowledge as embodied in production functions and input-output relationships in the commodity world and the development and change of preference and value systems. The problem can almost be summed up by saying "Do we get what we like or do we like what we get?" A value system, or a preference function, is never independent of the field of choice over which it is exercised, and in particular, widening the field of choice through changes in technology may profoundly affect value systems even in those areas where the technology has not changed. The invention of the automobile is an almost classic case in point. There is hardly any area of the value structure that has been left unchanged by this invention. It has changed our religious life, our sexual life, family life, the structure of our cities, and even in some degree the form of government. Television may have an even greater impact in the long run, for by introducing a new and rich channel of information into the home environment, it changes not only the family structure, but the whole learning process of the child and is resulting in a generation far more different from its parents than any generation in human history before. This impact of change in opportunities on the preference structure itself has been almost completely neglected

by economists, though businessmen and politicians have known about it for a long time, and it raises enormously difficult questions for the evaluation of social processes.

We may conclude by applying some of these principles briefly to the transportation industry. This industry exists because the total value system puts a sufficiently high value on moving things and people from one place to another. The proposition that mobility has survival value emerges very early in the game of evolution. This is, indeed, the great difference between animal and vegetable life. Vegetables do not get around, animals do. On the other hand, vegetables are still here in very large numbers, so that obviously mobility has not been essential to evolutionary survival. It may be, indeed, that there are certain disadvantages in mobility and it was this that forced the animal kingdom into those frantic attempts to improve itself that essentially ended in man, whereas the vegetable kingdom was able to realize the survival advantages of immobility and was not forced to develop so much complexity. Perhaps we should conclude therefore that mobility leads to complexity, but not necessarily to survival. We see this principle operating in the social system too. Transportation is a cost rather than a benefit and the less of it we can get away with in a sense the better off we are. The benefit aspects of transportation are nearly always associated with variety. This is especially true of the transportation of humans because, although this has some importance for dissemination, that is, moving people to where they are most useful, the main function of human transportation is the provision of variety of experience, which is something that we do tend to value highly and certainly has to be included as one of the elements in the field of choice.

The transportation system also provides something that has very little to do with transportation as such, namely, identity. A man on horseback not only can travel farther faster than the man on foot, but he is also bigger and more impressive, and he has a larger threat capability, at least in some circumstances. It is not surprising, therefore, that aristocrats were chevaliers, which is simply the French for men on horseback. The domestication of the horse probably did more to destroy equalitarianism and to establish hierarchical social systems than any previous technological development. The fact that if you fed a horse you could not feed a man in an era when the surplus from the food producer was quite small was a very effective guarantee that horses would be scarce and not very many people could have one. This again established hierarchy. The horse, indeed, in a crowded, agricultural society, produces feudalism and the whole feudal set of values, with a distressing degree of probability.

By contrast, the automobile has been a great democratizer. In a technologically advanced society it is feasible for everybody to have one as long as oil supplies hold out, for it does not require a food surplus because it lives on gasoline. The automobile is an extension of the human body just as the horse is, but where the man on the horse is a centaur, proud and domineering, the man in an automobile is just a fast turtle, protected by a shell from the world around him and on a fundamental level of equality with his fellow man in fellow automobiles. The difference between a man in a Volkswagen and a man in a Rolls Royce is much less than the difference between a man on a horse and a man on foot. This is why I suspect that, in spite of the architects and city planners who hate automobiles because they destroy the human scale of the urban environment, the automobile is here to stay as long as we have anything to power it. This large four-wheel bug with detachable brains may in a sense be the evolutionary successor to the pedestrian. The pedestrian, of course, will survive in protected places like college campuses, but we are going to have to face the fact that the pedestrian, like a vegetable, survives as an example of an earlier stage of evolutionary development. The universality of the demand for the automobile and the difficulty that even the communist countries have in suppressing it suggests that we have something here very fundamental and universal in the development of value systems. The automobile indeed is the temple of a new religion, more universal than any of the great religions of the past. It is religion of personal power and human sacrifice and this fact alone makes it extremely difficult to control. We should not be unaware, however, of the possibility of value mutations that will change the automobile culture. We see signs of this in the hippies for whom a "trip" does not connote transportation, and also in quite respectable elements of the

society such as the conservationists, environmental scientists, pollution experts, preachers, and planners.

A problem of particular importance to the transportation industry is the extraordinarily subtle and complex relationships that exist between political decisions on the one hand and the value systems of the electorate on the other. The relation between the value systems of political decision-makers and those of the electorate is loose in the sense that a great many political decisions are made arising out of the structure of political organization that probably do not correspond to the value systems of the electorate. In matters of highway development, for instance, a tax system that gives highway departments large funds only loosely controlled by legislatures has probably had more impact on the development of transportation in this country than any overt electoral process. Political decisions, like technology, also have a back-effect on the value systems of the electorate. There are bandwagon effects, for instance, that suggest that political decisions are, up to a point, self-justified, no matter what they are. Nevertheless, there is a residue of electoral power and of independent dynamic processes of formation of value systems among the electorate that cannot be neglected, and it is this perhaps more than anything else that produces long-run changes. About this sort of thing, however, we do not have a very good information system.

One concluding observation is that even though every institution, organization, and sector of the social system depends heavily for its survival and success on what might be called its value environment—that is, on the value systems of those persons who constitute its environment—the information system regarding this value environment is almost universally defective and this is perhaps one of the prime causes of decisions that lead to disaster. The most glaring case of this is the international system, which has an information system that is almost deliberately designed to produce misinformation and ignorance, but we find much the same thing in decision-makers in regard to domestic policy and particularly in regard to organizations and segments of the economy. A more explicit recognition of the importance of the value environment, therefore, and the development of an information system that can create more accurate images of it could hardly fail to improve the quality of decision-making in all fields.

Discussion

John B. Lansing

I was at first a little amazed that Boulding had chosen to write just this paper for this Conference. But I think it does make a good deal of sense to bring out the initial body of theory, which is very familiar to some people here and perhaps not familiar at all to some of the rest, if I correctly estimate the diversity of this gathering. There are in it a few key ideas that are really quite central to the problem that we are concerned with—quite abstract, but quite relevant.

Boulding immediately puts the value problem in a context of choice. You do not think just one value; you think immediately of a choice between two, and of course that generalizes to as many as you can comprehend. It puts emphasis on the fact that there is a trade-off and what that trade-off is depends on where you are. Thus, what is a good thing at one point becomes a bad thing at another, and vice versa. If we keep that firmly in mind I think we may cope a little more adequately with the community values that we are supposed to do business with here. We operate in terms of constraints, which is another useful notion not to lose sight of and a very familiar one, but one you can drop quite easily in a discussion of something as intangible as this.

I would have emphasized, more than Boulding did, one of the problems. He talks about the dynamics of changing values perhaps rather more than I think we need to. Though of course they are changing on us, we are in a bad enough way to get at the current position—as to what the value systems now are. I think the most serious difficulty is the one he suggests in that amusing bit about the red, white, and blue versus the riots in the little red book, which is that the subcultures, within which values may be taken as homogeneous, do not necessarily include everybody.

I think it is quite reasonable to suppose that the value systems of different racial groups in this country and of people of different socioeconomic status are different. They may very well be meaningfully different in terms of the value systems that we have to deal with here.

Mattie Humphrey

I got a different impression, although not a conflicting one. The challenge that we had prior to the speech—namely, to begin to get at how values can be compared and traded-off—was on my mind when I listened to the talk, and the talk gave me a clue as to why it did not necessarily have to be viewed in that way. The minute Boulding identifies value as process rather than thing, or explicit objective, there is the possibility that values can be derivative rather than competitive; meaning that, if community implies a whole, then one gets at the central core, or the heart, or what is the life-death reality, of the whole and derives the values from that.

There was also an implication that there are a number of communities and we seem to shift from one (the single) to the other (the plural) as we talk about it. We can conceive of an "American community" but then we start talking about the whole community and then we start talking about communities. In one context we are talking about a whole nation and have to derive some values as to what is essential to the life of that nation. But if we get down to another level, where we can talk about differing communities and competitive values, we are not talking about a whole nation and I do not know how clearly this is coming through. I think we have to decide whether we want separate competitive communities to be weighed against each other in terms of trade-offs or whether we want

to get at the heart of what is essential to "the" community—that is, America—and begin to develop and accumulate values that are essential to the comprehensive life of the nation. From my cultural bias, people who are immobilized and forced to deal with conflicting or contradicting realities will tend to develop a more conceptual way of moving around and will begin to use a great deal more imagination because they cannot actually move physical things....

Samuel J. Mantel

I have two very short comments. First, the framework Kenneth Boulding set out—this whole general area of indifference analysis—has buried within it a trap for those who are not accustomed to using it or not accustomed to conceiving things in those terms. The trap is the following: You cannot aggregate individual preferences into group preferences. When you look at preference systems through this frame of mind you cannot expand the set of preferences you find. This means that when you pick up this kind of a format for looking at preferences (and it is an extremely useful one), you must concentrate on selecting the kind of population group you are going to live with for the duration of the analysis.

Second, and this is a pragmatic response to Boulding's speech, the emphasis on the dynamism, I think, is very well taken. Nobody really understands how to go in and identify a set of values in the way we normally rather casually toss out that expression. We do not know anything about them. What we can do though, sometimes, and we all do this when we respond to one another as individuals or watch nations respond, is to gauge changes in value systems and set up our response based on the perception of a change that we do not really understand in or of itself very well.

John B. Lansing

If one can get some reasonable grasp of what an operative value system is at the present time, then one is in a better position to tackle the question of how it is changing. Boulding points out the differential ability of people in various disciplines to understand the nature of change in a value system and the impact that the changing system has on things we are doing now and should be doing in the future.

I think it is clear that values are changing. But, for instance, can we assume that we correctly assessed values when we were building highways in rural areas? The rural resident, even if he had values that differed greatly from those expressed in the highways built in his area, did not utilize the modes of opposition that are used in urban areas today.

Allan B. Jacobs

We have been discussing values, choice, and trade-offs. It seems there has been an underlying assumption accepted that there always is a possibility of trade-off. I would suggest that, concerning some values, there may for all practical purposes be no possibility of trade-offs.

Rodney E. Engelen

In our thinking about values and the use of values, we must remember that we are trying to apply these at many levels. For example, there is the basic level of trying to decide allocation of resources for transportation in contrast to such other social needs as education or recreation. This sort of basic decision-making was involved when the Interstate System was built. The execution of that decision has an impact on a variety of other plans down to the metropolitan level. I do not think we have even begun to get the feedback impact of that Interstate System on our value systems.

We have to make a realistic appraisal of whether we can afford our values. There may be some limit for this country in what we choose to do and value. Maybe we have to find some less costly ways to achieve some values.

Reverend Robert G. Howes

This question of values is one with which we deal occasionally as preachers and planners. I wonder if it might not be necessary to move the discussion of values to a little different level than seems to have emerged so far.... We should move the discussion to the level of values as a sense of restraint; a sense of self-sacrifice, a willingness by people to be hurt here and now so that somehow an overall good can be accomplished....

I suggest that unless we are to have total anarchy we have to accept in democracy a notion that somehow a reasonable consensus of reasoning men, at any given point, can be said to have established an overall good. I see a whole set of metropolitan burdens, some of which are objective and some of which are subjectively perceived to be burdens: for example, public housing in suburbs or downtown, airports, noise, pollution. I suggest that what we may require is some kind of a metropolitan ethic—a metropolitan morality.... We need a people who, in an enlightened self-interest that can operate only on a metropolitan level within metropolitan parameters and... in a reasonably conceived dedication to a common good, will be willing to sacrifice itself somewhat. I think if we are going to look for an enlightened self-interest within local parameters and expect any urban or suburban neighborhood to accept any of these metropolitan burdens without a metropolitan morality of some sort that we are wasting our time; we are not going to get to first base.

Alan Altshuler

If we want to devote this session to beginning to give some direction to the conference, perhaps we ought to become a little bit more concrete in terms of identifying what the central issues are that are agitating the country. It seems to me that the first, and probably the most important, issue in transportation is the egalitarian issue. The way in which this is posing itself is that we clearly have a majority of the country that owns automobiles and is highway-oriented. For this majority of the country, quite clearly, the Interstate System has made mobility greater and has produced great satisfactions. At the same time, by changing the layout of our metropolitan areas in response to the automobile—by placing the places that one wants to get to further and further apart, by encouraging the growth of the automobile and, therefore, destroying the patronage base of transit and, at the same time, by spreading things out reducing the potential for walking as a way of producing mobility satisfaction in society—we have probably produced an absolute, and certainly a drastic, relative worsening of the position of those who cannot get around by car....

The second issue, which really flows out of the first issue, is the issue of what kind of society we are. Are we a crude majoritarian society, or are we a society that is tolerant of, and cultivates, pluralism and diversity and tries to build a near-universal

national consensus for its policies rather than just a majoritarian consensus? And what is the price that we are prepared to pay for a very broad consensus among the major groups of the society, particularly such enormous groups as the blacks in our central cities?

I think it is quite clear that this society is not devoted to total equality. But, if one looks at the issue that agitates the country, it is the demand by some people for equality versus the resistance of others to those demands. This is the drift of American policy, probably over the course of the century, but certainly over the course of the 1960's. It seems fairly clear that the movement of society has been in the direction of greater consensus along several dimensions. The clearest, the one in which there is the greatest degree of consensus, is equality of opportunity. But beyond that, there is increasing agitation over setting minimum welfare standards. There are other aspects as well. There is the issue of equality before the law, the issue of equal consideration for the victims of progress as for those who benefit from progress, and so on. I am not sure exactly how to phrase all of these because some of them shade over into compassion as opposed to equality. But nonetheless these are the issues that are the central domestic issues.

If I was going to theorize a bit further about it, I would say that when American society is not doing as well in the aggregate as many people, particularly economists, believe possible along the dimensions of economic growth, full employment, and so on, that those tend to be the central domestic issues. When, however, we are doing well along the lines of growth and full employment, the central issues become issues of equality or issues of quality...maybe both. By quality, I mean such things as safety, purity of the environment, beauty, and so on. And probably the extent to which we focus on equality as opposed to quality is the extent to which the law and the militants are raising the egalitarian issue. At the present time they clearly are, and particularly in connection with urban highways. That is why the critical value issues that we face in urban transportation today are those in the more densely populated areas of our urban conglomerations, rather than throughout the country.

On the whole, I think the American people are a people which sets rather broad constraints for its government. Only when the government goes beyond those constraints do particular groups of people begin to make a tremendous fuss. The American people do not expect to guide their political leaders in detail; they rather hope to place them within broad bounds.

The one other point I did want to make is that we can learn from the quite natural failures of the past. This is not a matter of using hindsight to blame those who were doing the planning 20 or 25 years ago, but, rather, to try to learn from their experience. Their experience, I think, poses two crucial planning issues for us. As we make a grand design for a long-term future, because we have to, how much ought we to be thinking about leaving ourselves options all along two dimensions? One is clearly the time dimension. The whole grand design should, insofar as possible, be loose enough so that we can change it in response to changing values. We should try to design this flexibility in. The second is to think about which aspects of the total program are really national in scope, statewide in scope, metropolitan-wide in scope. To what extent can we leave state option in national programs, metropolitan option within state and national programs, or neighborhood and small-city option within metropolitan, state, and national programs? A very strong case can be made that we have tended, in the past, not to identify selectively enough those aspects of a national objective that really did require a national policy. Rather, we have assumed that because certain aspects of the policy required national supervision and a national determination of priorities that all aspects of the policy did so. The learning experience that I think we ought to be going through today is that of how much option we can build into these national programs, without sacrificing those values which made a national program necessary in the first place.

Milton Pikarsky

The concept of the public good undergoes evolutionary changes so that, if we are hopeful of coming to some absolute value judgments, we are bound to fail in this area.

One of the examples we have given in discussing the concept of the cost-benefit ratio was the motor fuel tax program of Oregon in 1914, which was the first of its kind. Soon most of the states accepted the same principles, and all of them did by the 1920's. Then the values of priorities came up and the cost of road construction was compared with the benefits to the road user only, without taking into consideration the values of cost to the adjacent owners. We were concerned with the farm-to-market road, with transportation between cities. With the advent of World War II, we found that the heavy urbanization of the cities combined with the deterioration of the existing physical plant and the obsolescence of the plant, due to increased population found at the conclusion of World War II, combined with many other problems of a social nature. We tried to solve some of them with highway funds and highway money. The highway program was used as an aid in the removal of slum areas, something which had widespread approval. We did not realize what dislocating neighborhoods would result in, what dispossessing people would do. As this was realized, Government became involved in more than the physical problems of "...pick up my garbage, take care of new bridges, build a new school." Now we became involved in the social field, the welfare field, education, fighting crime, and other areas where Government had not previously been as greatly involved. I think this evolutionary change will continue.

Donald Appleyard

Values belong to groups of people or communities or to people in different roles. In trying to construct a framework of use to planners, we have to identify value systems in some way with particular groups in the population. It complicates the matter enormously but is much more productive than talking in the abstract.

Each of the professional groups in highway planning also has a different value system or at least weighs values in a different way. It would be useful to identify the value profiles of all such groups.

Abraam Krushkhov

There is a kind of humanistic trend expressed by people here which implies that we are not so much interested in controlling our environment as we are interested in understanding it and relating ourselves to it better. This can be exemplified by the idea that maybe, in some cases, the best use of land is no use at all. I think this is just one difference between the humanistic and the scientific approach as a matrix for the valuing process.

There are three other levels of valuing that are going on today which I think are very important. The astrophysicists and the space explorers are showing us, with each passing day, how miniscule man is in the whole expanding universe and in the diminishing earth as a part of that expanding universe. I believe that what is happening is that we are being subjected to the most massive attack on man's egotism since Copernicus' time. And, if you really see man becoming more and more miniscule in this expanding universe, it almost makes a conference like this useless. Because, you wonder, what are we talking about? Our own egotistical values in a time and place in which, maybe, we are just a passing moment—in this complete solar and interstellar development—and maybe we will not be here much longer due to some possible accident in outer space.

Dropping down another level, to the level of the atom bomb and Vietnam, you can almost see why there is such a fantastic disenchantment on the part of the young people in this country today with the valuing process that is going on in existing urban institutions—they are not buying it. The inflexibility and the rigidity of our present urban institutions and their incapacity to change and renew themselves is what is driving a whole generation of people out of this society.

And, of course, the last level of values may be what we really are here to talk about. This is at the community level and certainly in the area of race relations—all of the factors that have to do with the changing times and the social upheaval that characterize so much of urban society throughout the entire world and not just in this country.

Clarence A. Steele

I just want to make two comments on this excellent paper by Boulding, not necessarily in disagreement, but as an extension of his remarks. He comments in one place about social values changing. I am not so sure that that is exactly what happened. I think it is not so much that the social values change as it is that, at a given time, the emphasis changes. Let me demonstrate what I mean. We were talking at the office the other day about campus disturbances and all that sort of thing. One of the feminine members of our staff said, "Why, 25 years ago, when I was attending one of the local universities here in the District of Columbia, we protested R.O.T.C. We carried placards, and we sat in and disrupted a meeting. How much different is that from what is happening today?" I remember, too, that during the depression when I was doing graduate work at the University of Wisconsin, we had a very active peace group there and those who did not see things quite the same as they did were saying that these people were determined to have peace even if they had to lick everybody else in the world to get it. What I am trying to say is that I think, fundamentally perhaps, there are more similarities than there are differences among us. We emphasize certain points and we disagree on them because a particular thing at one time is important to us, or is made important by a situation that develops....

Erwin A. France

Are there some basic human values? If there are and they can be identified, how can they provide a context in which to look at the whole question of community values as it relates to transportation planning? I believe there are some basic values that traditionally get ignored.

Irwing J. Rubin

Let me share with you some of my observations in Michigan with respect to freeway development. Building a lot of mileage in rural areas had a great positive effect and the negative impact was minimal. When constructing freeways in central cities, we saw the increased housing problems and other difficulties associated with dislocation. We also saw that additional highway capacity was provided. But the value of the additional freeway segments tends to become marginal in many of our cities today. This gets us back to the concept of trade-offs and the different ways in which a particular contour level on the matrix can be achieved.

If we begin to analyze social developments, it has become quite obvious that the major problems are those that relate to dignity, to manhood, to the ability to...have an impact

on Government with insistent demands for improving facilities, education, and so forth. But the major thrust is a demand for power. At the same time, all of us have been subjected to a tremendous amount of difficulty in suburban areas, where we find ourselves dealing with fomenting home rule and demands for local control. These, in essence, are not much different from the Black Power demands and the demands of the black community that we find. As a result of all of this, we find ourselves dealing with a better perception and understanding of the urban and metropolitan process. We are forced, many of us very unwillingly, to begin looking at far more fundamental issues which relate to values and are beginning to question whether mobility in and of itself is the thing that we are seeking; or whether what we are seeking is mobility in order to serve the needs, wants, and desires of people in the community in order to achieve certain regional and local goals....

Part IV
Issues: The Community Viewpoint

In this part are reported the experience and ideas of those who feel the impact of transportation facility construction—not as users, but as residents and officials of areas through which new transportation facilities must pass. Commissioner Ylvisaker's paper describes some of the basic issues that have made urban areas so sensitive to the changes caused by construction of transportation facilities. The panelists, Miss Humphrey, Mr. Milano, and Mr. Schloss, describe their personal reactions as residents of communities. A discussion follows, after which are excerpts from the reports of the first workshop chairmen, which identify the things people value that are related to transportation and the community.

The Resident Looks at Community Values

PAUL N. YLVISAKER, Commissioner, New Jersey Department of Community Affairs

This session is not going to be an easy one in which to satisfy all the things that you would like to talk about, all the things the panelists would like to say, and all the things I would like to get to. The subject matter is infinite, the questions are infinite, and I thought it might not be a bad idea for me, in the introductory statement, to become a little bit more abstract, because we are going to have at least three people here who are going to bring the discussion down very quickly and very hard to the here and now.

We would not have conflicts of values having to do with transportation facilities if the following conditions applied: (a) if a transportation facility were built on open land that is otherwise unusable; (b) if that land were sold at half the price the public expects to pay and twice what the sellers expected to get; (c) if the facility extended between two points where everybody wants to go, at twice the former speed and half the former traffic; (d) if it is built by contractors who have no political involvement and by engineers who are trained as sociologists on budgets that provide for all the extras and the amenities and do not require tolls or taxes; and (e) finally, if it insures that both the incumbents and the opponents are going to win in the next election. Now, since these conditions do not always apply, we have been asked to attend this conference, and for some of us, to write some papers.

My assignment and my predisposition is to be on the side of the people in those situations where human values and transportation facilities collide. I will never forget the politician who, when asked what side he was on, always said, "When the vote comes, I'm on the side of the people." Now the question is, Which people? Whose values?

My answer begins with two values that all of us seem to hold, and with an ambivalence that all of us seem to feel. The first value is that of mobility. We all want to be free to go where we want, to come and go as we choose from anyplace and to anywhere. The second value is that of stability. We all want the assurance of knowing that our home is our castle and that our turf is secure. (By the way, I find that African Genesis explains more human behavior, including my own, than I care to admit.) Now the ambivalence lies between these values and, frankly, it lies within ourselves. If we are blind to that ambivalence within ourselves, we blame the other guy when the roads and trucks and tracks and runways are bulldozed through our homes and our neighborhoods. If we are more honest, we admit that, in this battle, we have met the enemy and "they is us," because it is our roads, our cars, and our convenience as well. If, indeed, we were dealing fairly and squarely with citizens of equal power, struggling equally with these two contending values, I for one would not have any problem at all accepting democracy's classic formulation, which is: Let the majority rule and every man fend for himself. But the circumstances and the times we live in are not that simple and the formulas are not that easy. Let us look at two of these conditions that suggest the danger and perhaps the disaster that follows from too simple-minded an application of majority rule. First, the urban poor. The power to fend for oneself is not equally distributed in our society. Worse than that, those citizens who have lesser power and lesser fortunes are concentrated where they are exposed more to the costs than to the benefits of transportation development.

Over the last half century, by mechanizing agriculture without industrializing housing, without rebuilding cities, and without modernizing our systems of social security and social services, we have herded the poor and the more dependent into the unstable environment of deteriorating urban ghettos and gray areas. More then half these migrants are too young to vote. Newark is 54 percent black; the median age of that population is 16. And probably, I would guess, up to 60 or 65 percent of that population is not eligible

to vote. They are too young to vote so they do not easily acquire their fair share of political power. Half the urban poor are in households that can never expect to become self-supporting. For the rest, jobs and skills are hard to come by, so they do not easily acquire their fair share of economic power. The tax jurisdictions they reside in are cut off from a fair share of public revenues. Religious, cultural, and educational institutions shrivel up or are transplanted elsewhere and, therefore, social and cultural equality are not going to be had. Finding a home, much less a castle, in this environment is difficult enough. Achieving stability, in the sense of security, has been all but impossible.

When, for understandable reasons, the rest of us—the nation's suburban majority—decide to improve transportation facilities into, outside, and within the city, it further displaces the already displaced; makes less secure those already insecure; further depletes the already depleted housing supply; further inflates the already inflated cost of shelter; further diminishes the already diminishing tax base; makes easier the exodus of those more fortunate who already have too easy an escape; further breaks up neighborhoods already disrupted; drives out businesses, the small shops and services that are already operating too close to the margin.

Having got the worst of the cost, these citizens also get the least of the benefits. Construction jobs do not go to the local unemployed. Contracts are beyond reach of the indigenous entrepreneurs. Bus routes are scheduled to other people's conveniences. Local parking is limited. Insurance is absent or too costly. And so it gets to be the other people's cars, for the most part, that use those highways; the other people who ride those new commuter cars; the other people who fly in and out of those new airports. Not only that, but, given the imminence of demolition and displacement, houses do not get repaired. Given the shortage of low-income housing, codes do not get enforced. Given the failure to enforce codes, there is a general cynicism all around. By the way, it is the responsibility of my department to inspect all multi-family dwellings in New Jersey, and I have felt the pull of that cynicism: not the funds to hire the necessary inspectors; not the enforcement machinery to make penalties stick; not the housing supply to rehouse those evicted. Given that cynicism, everybody turns to despair and a few, and perhaps more and more, turn to violence. This has been the reality of life among the urban poor. Transportation built to other peoples' advantage and specifications, their stability sacrificed to others' mobility, and their own immobility the cost that is paid for others achieving stability.

No small wonder, the hostility and the explosiveness that greet the announcement of yet another highway boring through this neighborhood of the old town. Particularly when the recurrent pattern is seen to have been designed with political and social malice aforethought: the road that became the dividing line between white and black, between rich and poor, or that device to extrude a growing electorate from town and, thus, ward off a shift in political power. This is the tragedy of this collision of systems—the system by which the poor are trying to achieve a modicum of stability while others already secure try to perfect their mobility each with its own logic and each with its own urgencies.

The tragedy is that it may not have been necessary. Certainly it need not have been so harsh if some of us had bothered to do a proper job of systems engineering. For we are dealing with systems, but we are dealing with them provincially and inadequately. There is an agricultural system, which we mechanized without taking thought of those who were going to be forced off the land. There is a migration system which we have let flow into areas that could not, and still cannot, healthily absorb that migration. And that migration has gone into another system, which is the economic death trap of the deteriorating central city.

If you do not believe it is a system, watch how the Robin Hoods of Boston ran a declining community for nearly a century as a system. The job that Ed Logue and others have had is to try to reshape that system from one of decline to one of growth. That system in turn is caught within a set of other systems: the decentralization of manufacturing toward open land and horizontal layout; a property tax system; a public revenue system that discriminates against low-income citizens (as a matter of fact, it discriminates against about every kind of citizen and it discriminates also against regional

development); a social system that builds prejudice into suburbia and a class barrier around the central city; a housing system that has resisted mass production and industrial techniques with the result that costs are rising and housing supply lags disastrously behind demand; and a social welfare and service system that puts the consumer at the mercy of the professional guilds, that bogs him down in bureaucracy and mires him even deeper in dependency.

Let me explain what I mean if it is not obvious. What we have done, really, is to change the nature of our society and the drift of our society from mass production, distribution, and consumption of material goods as the basis of planning our communities and cities. Now we are getting to what, I would call, is a service city. Where we are, or have to get to shortly, is to the mass production, distribution, and consumption of services—critically needed services. The housewife no longer wants to measure her poverty, or other living standard, in terms of how much money the breadwinner brings home. She wants to know what her access is to a market basket of critical services—doctors, schools, or whatever.

Frankly, the need to mass-produce services in our democracy is meeting up with an older system, a medieval system by which the suppliers supply these services. Guilds of doctors, guilds of lawyers, guilds of philanthropoids, and guilds of educators who operate on the presumption that they will determine the quality of the service, the conditions of its delivery, and the price of its delivery. The new system that we are running into, and is best expressed by the militants in the central city right now, is that these services must go into the modern era and the production and the supply of them must be on a mass basis. Also, we discover that the welfare system has its own guild and its own medieval practices. And again we are trying to break through that. The result of not being able to break through is this dependency that has been built deeper and deeper into the central city.

I sympathize with one person here who said that Altshuler was beating a dead horse. To a degree, I am beating a dead horse. We have already gone through the most critical of these 20 years... in which the migration was the most voluminous and was mostly tracked into the central city. Also, during this period of time, we broke into highway production at an unprecedented scale. Now we are at the point where, I understand from Commissioner Goldberg and others, most of our highway building will be in the outlying areas, not the central cities.

Also, if you have noticed, since the riots the Census Bureau is reporting that the migration into the central city is sharply diminishing. Blacks have heard about the riots and they just are not coming in. Average income of the male worker in the south is coming up toward parity and the net migration out of the TVA area is now nil. Also, black middle-income people are getting out of the city. In Newark, they are going up to East Orange and other places as fast as they can. The whites are pulling out and, ironically, we may finally get some expression on what Ray Vernon (The New York Regional Study) called for, or said was going to happen, which is areas of undersized housing in most of our central cities.

However, do not get too quickly optimistic. The natural rate of increase in the central cities is high. The dependency and social conditions of those who remain are aggravating. More and more kids in the central city are being raised without parents or with only a single parent. The percentage of those dependent probably is going to remain constant or increase despite the general drift toward affluence.

The interplay of the systems I have talked about is terribly complicated. Some of us sometimes wonder whether the complications have gone beyond the capacity of the best of us to understand or to manipulate. That doubt has produced a temptation in each of us, working within our individual systems, to try all the harder to achieve autonomy and unilateral control. But the growing spirit of the times for citizen participation and militant expression forces us to do our highway and social engineering out in the open.

As a bureaucrat responsible for increasing the housing supply in New Jersey, I feel that urge for autonomy. There are days when I begin to appreciate Bob Moses—days when I am set to tramp over everybody else's system, everybody else's jurisdiction, every bloody committee of jealous bureaucrats and complaining citizens that seems to

stand in the way of getting the houses built where they should, when they should. You may say, "Yes, that's familiar, we've known all that." The one thing I wanted to point out, using the urban poor and the urban core to illustrate, is the fact that as you come in with transportation you have, clearly, run into and run afoul of other systems, each with its own urgencies and its own logic.

Therefore, move toward the second condition that I would like to talk about, which I could title, "Is Anybody in Charge?" I have deliberately touched on the emotions, the hostility of two groups: the hostility of the urban core, who with good reason feel now after 20 or more years that they have been kicked around enough by what they call the system; and the anxiety shared by some of those citizens and technocrats alike, who have begun to sense that we are all being moved by a complex of forces that we cannot get hold of and that we have not mastered.

Transportation planning, the kind that brought in the higher critics and the higher, more sophisticated, techniques, began with the optimism of simple objectives. Witness that decision we all made in the 1950's; I will never forget the conference at Connecticut General when we decided to build a vast network of highways, and in the process we were going to work out the salvation of modern man. Similarly, the urban revolution of the early 1960's began ebulliently and with those same simple objectives—simple objectives that were to stop the bulldozer and take over control from the guys who were sending it in.

But now an uneasy feeling is growing that something more fundamental is wrong that neither the speed-up nor the slow-down of highway construction nor the strengthening nor the overthrow of established authority is likely to correct. I have seen that uneasiness in the faces of both the establishment and those who are attacking the established order.

If such apprehensions are right, we may be trying to work at a set of systems that will not or do not jibe. And even if they were maybe made to jibe, they will not work. That apprehension helps account for the restiveness of all our kids who, even when they are affluent, are carrying the rebel flags of the poor and others in revolt. It helps account for the question being asked in many places and among the Young Turks of the church, among the Young Turks on campus, and among the Young Turks of business: whether a society bent on material gain and made, perhaps, too mobile for its own good is fast losing its soul in the name of progress. It also helps account for so many who are cutting out from the governmental process. Their instinct tells them that government cannot do it even if it tried and, in most places, it is not even trying. It also helps account for the consternation of the most advanced systems engineers and social scientists, who have tried matching their techniques against the complexities and come away with their hopes and their lances broken.

Pat Moynihan, before he accepted his new job, went down with Dave Reisman to be the brain trust for Eugene McCarthy, as I recall. They had spent all day arguing about what program McCarthy ought to have and when they held their press conference they told the press: "Forget it, things have become too complicated, and the intellectual doesn't have all that much to say." Well, it does not keep the intellectual from going to Washington, but it does introduce a bit of modesty! It helps account for the self-doubting even among revolutionaries who have discovered now how to blow the system but cannot really figure out how to put it together to work differently or at all.

There are a lot of other complexities that I could talk about and they will emerge in the discussions here that follow. They all have to do with values—values that are not easily priced on the market; values that are not measured by desire lines in the most sophisticated computations, or weighted in elections. These are, for example, natural beauty, privacy, the balance of nature and the rest, none of which I have talked about. Though, if you like, I can talk about jet ports and swamps and meadows and natural preserves. I can talk about my son's concern as to why, when our civilization of bulldozers comes along, nature takes such a beating. But that is more familiar ground. We cannot forever pause, either with some of these complexities or some of these self-doubts. So I would like to try a few guidelines out on you, and a few rules and probably a few recommendations to see whether they make any kind of sense.

First, certainly we have to strengthen our capacity both to relate to larger complex systems and simultaneously to relate to the individual and to small groups. Unless national policy and local experience coincide, something is wrong. Unless we can make aggregate policy come together with individual experience, something is basically wrong. We have to move, I think, from an emphasis on technical planning within specific functions to coordinate planning among functions.

Let me put a few particulars to you. We did, during the 1950's under the massive appropriations and amounts of money that were released, begin creating sophisticated studies within the province of transportation. I have a feeling, after 10 or 12 or 15 years of such studies, that we have reached the point of diminishing returns from investment in that kind of technical planning. (Interestingly enough, the most beautiful people in that business can be put down with two martinis and a fireplace and they will philosophically conclude that maybe it is not in a description of how things do operate but in the will of the men who say how things should operate that the real answer lies.)

I would agree, therefore, that there is now greater need for, and more to be gained from, analysis that aids the nation's legislatures and chief executives in determining the proper mix and allocation of resources among specific functions and competing demands, especially between housing and transportation.

Housing, which I am responsible for in New Jersey, is a "pick-up-the-pieces-after-everybody-else-has-had-their-chance" kind of operation. We have not socialized housing as we have socialized transportation; therefore, we have to wait on the spontaneous operations of the market. We do not feed capital into it with a perseverence that is found in transportation. As a result, the flow of capital into housing is disastrously erratic. We have not ensured that all people can live in houses, as we have ensured that everybody can ride on freeways. A house has to be purchased by some very clumsy instruments.

Not only that, but relocation gets to be the after-game, the deceptive manipulation of numbers with even the honest administrators caught in such a housing shortage that they cannot possibly add up as many decent accommodations as there are displaced families to be rehoused. We cannot play this numbers game any more—calculating houses where there are none. Nor can we keep assuming that central cities, even when refurbished, will absorb all the urban poor. Not even black nationalism will accomplish that. The densities that the black mother requires for good living are not the densities of high-rise public housing, and land is short. What she really wants, despite what the militants are saying, is a single-family house to raise her kid in so that there can be two walls and probably a stretch of lawn between herself and her neighbor's arguments. Even the densities that the militants are willing to take in their rehousing are going to extrude part of their own population, which they would like to keep for voting purposes. And if one adds the highways and the rest, it is going to be impossible, really, to rehouse present densities in those areas.

Central cities are, therefore, caught. They cannot afford to say they cannot meet state and federal relocation requirements—if they did, they would not get urban renewal, highway, and other monies. So they say they can, even when they cannot—and the urban poor suffer the consequences Frankly, I would like to see the relocation costs and the responsibility for rehousing placed within transportation. The cost of a highway should be the cost, not just of displacement grants, but also of supplying housing in alternative sites for those who are displaced by the condemnation powers of the Highway Department. We, in the housing business, have a heck of a time obtaining these condemnation or acquisition powers. The result is that we cannot get the land, and, what is really worse, even if we could, we come along after the highway or the transportation facility has been built.

I would also like to see transportation not only involved but probably responsible for the development of national policy of new towns or major large-scale developments. There is no question but that we have to house the net growth of our population on open land. The business of trying to do it in the central cities is almost impossible. It is too long, it is too costly, and the land just is not there. Furthermore, the trap of the central city is that, by continuously housing a heavily dependent population, it sinks even deeper into economic depression and bitterness tending toward revolution. You

have such utter dependency that the kids who grow up inside it are going to have to be beat by the time they are born. We are going to have to break out of the iron noose around the central city, and allow the diffusion of this captive population and their re-housing on open land. But the problem is not limited to the poor. The rest of us are also involved. The cost of housing now has reached the point where half the population cannot afford to buy or rent a new housing unit built by the conventional method. To achieve economics in building, we will have to turn to industralized housing, and that in turn can be achieved only when we have assembled a market of sufficient scale—obviously on open land, which means the building of new towns. And that in turn will force us to confront the values those new towns will have to express if they are to be places people will want to live in.

Generalizing these national goals and policy is going to test all our capacities. Recently, a group of state people went down, at the invitation of the federal government, and talked with members of the cabinet and their aids. The exchange was a very interesting one. I had the feeling, and it was a sinking feeling, that officialdom has not yet developed the capacity to handle the complexities inherent in developing a national urban policy and sorting through the values implicit in all our categorical urban programs. I noticed that Model Cities—almost as a straw—was being grasped for as national urban policy. But Model Cities is not in itself a policy; it requires one. By itself, it is a program and quickly becoming just another categorical program.

What we need is, at the level of the National Security Council, to take on the problems of mobility nationally, of housing nationally, of community building and migration and settlement patterns as more than fragments. And within that to do some extraordinary things.

One innovation that I think we need is income maintenance. It is a radical solution produced by conservatives—Barry Goldwater and Milton Friedman—and yet it makes sense. I challenge anyone to lick the problems of the central city without income maintenance. If you were to employ all the hard-core black unemployed in this country you would only add 1 or 2 percent to the black income in this country. If you were to hire and train all those in the metropolitan area eligible for employment but unemployed, you would be dealing with only 15 percent of the urban poor. About 85 percent of the metropolitan poor are poor because they are too young to work, mothers who should not work, or people who are too old to work. And then there is another great bunch—about 34 percent of the urban poor—who are working full time and living stable family lives who just do not bring home a paycheck that is enough to bring them above the poverty line. Until the urban poor have enough disposable income to move freely into the market for their essential goods and services, we bureaucrats are going to keep stumbling into inadequate programs, clumsy mechanisms, and citizen complaints that will stymie us absolutely.

Another "radical" suggestion: I think it is about time we re-examine and maybe cut back the regional planning that we have developed in the form of technical operations around this country. It has grown larger than its accomplishments; and now we have saddled it with another dubious job—grant review under Section 204. Regional planning has been doing little more than to confirm the trends of majority welfare of a suburban variety. The ten categories of grants that are put through the process of metropolitan review under Section 204 do not include housing and urban renewal. And I challenge you to take a look at the metropolitan plans developing, with the best of technical competence; they only confirm the isolating and prejudicial patterns of suburanized America. The zoning game cannot go on much longer. We in New Jersey this year are going to try to call an end to that game, and will place before the legislature a proposed revision of land-use regulation. We will ask that no master plan be valid unless it makes provision for housing and employment and clearly does not discriminate.

Finally, let us be honest. What we have gained most from black protest is a mirror held up to our own inadequacies. That is protest at its best. At its worst, they too are humans, playing a political game, a game of self-advantage. But at its best they are really saying, "We have watched for 20 years while you people with all the funding and

technical knowledge have made a mess of the communities in which we live." And then they add, "We might escape from the mess of the central city only to find that in the next stage of 20 years you're going into other areas and make a mess of them." This may be an overstatement, but it puts the needle to us and holds the mirror up to us.

It would be honesty at this point to say, "I am not sure we are so right that we can continue massively with transportation." In Newark, recently, New Jersey's state officials, under some pressure, stopped Route 75 until the housing supply of Newark is adequate and can absorb the displacement that highway would produce. I am not sure that we have not reached a point in our eastern seaboard civilization where some "stop planning" may also not be in order. Any of us with public jobs to do and pressures to get them done will boggle at the thought of a slowdown. Still, after listening to the voices of those who have paid the cost of other people's benefits, there is a part of me that is ready to have long talks about other people's values before concretizing my own.

Panel Discussion

Mattie Humphrey

As a resident looking at community values, I have attempted to just forget about transportation and try to share what is my sense of community. The things that Paul Ylvisaker has said refer explicitly to transportation and if I look at transportation as simply one issue in a whole spectrum that I, as a resident, have to deal with, then I would not talk about it as transportation but as one issue among many issues. Growing up as black, as female, within the American context, one has to either become completely insane or begin to get some concentric relationship to the values that are acceptable.

Those values of the so-called larger community that are directly in conflict with the basic things I need as a human being become, to me, extraneous, unnecessary, and optional. This is why I have difficulty when someone says that the goal should be reconciliation. I belong to one community where there is a strong aspiration just to achieve some basic, minimum creature kinds of necessities. At the same time I observe other communities where the aspirations are toward, I would say, greed and idolatry. What I feel, as a resident, is that there must be a balancing in terms of our goal for the public good. Then we apply the particular goals to what we can perceive as separately aspirating communities.

When people have been compressed in terms of not being able to have choices in housing, which means that they are stabilized geographically without options, and those very same people do not have optional transportation systems, the intensity of the need to relieve that overall life situation is much more critical than somebody trying to get access to a drive-in theater. I do not think that these weights are equal. I think one represents a cumulative denial of the basic human necessities—of air to breathe and space to occupy. The other represents a constantly reinforced greed or idolatry of bodily kinds of things—entertainment, money, all those external things that do not in the end fulfill the human being.

The community in which I live has been fighting an expressway for about five years. We did not see the need for a highway because it separated my community from the high school by a six-lane thing and it interfered with five feeder patterns of elementary schools. But everything that we said to the city council was interpreted as militant or protest and as having nothing to do with the logistics of our transportation. We, on the other hand, felt that we were being frustrated in our mobility rather than aided. It must be recognized that many values are related to the invisible, intangible realities of our lives.

I am supposed to accept the notion that there are some values which I ought to have—until I begin to question the nature of those values as they relate to me. We, as the technical bureaucrats or politicians or whoever, have to face up to the fact that we have been selling something that does not exist: we have been selling it legislatively; we have been selling it locally; we have been selling it religiously, socially, internationally, and at home. We have been selling American values. And I am suggesting that, in effect, values to Americans run the whole spectrum from good to evil, and they are being highly subsidized out of the tax dollar. Which means that I feel, as a taxpayer, the middle class is oversubsidized. We talk about welfare and subsidies that poor people get. Yet, when you look at how that money is spent, I would say that 95 percent of it goes into the salaries of middle-class technical and professional people. So, the whole question of subsidization should be looked at in terms of what are our values as a nation? Is it that we want an increasingly smaller number of people to get increasingly larger shares of whatever we produce? Or, is it that we want to begin to find some balance to human life and have all of us move toward it?

The basic way I understand competition is that one persons is at point X trying to move away from point X, and the other person is being moved toward point X. We ought to find a common point X that we would all want to move toward. This would mean that we are not dealing with one pole or the other, but are dealing with what our comprehensive life is as a nation. We should begin to reapproach a balanced human existence rather than simply motivate people toward affluence, material abundance, etc. As a resident of a particular community, I am willing and ready to settle for some basic human values recognizing that, as an oppressed person, I am entitled to considerably more.

Ernest J. Milano

I represent an association in Albany formed about three years ago to improve our neighborhood. About the first of February last year, the State of New York issued a feasibility study, in the form of a brochure that has very attractive drawings...to construct an arterial across the heart of Albany. [Editor's note: This arterial had also been shown in the City of Albany's comprehensive downtown plan of 1962.] This arterial would take 350 parcels of property; it would displace roughly 740 families; ... and it would displace roughly 40 brownstone buildings in our neighborhood alone.... Our principal objections to this plan come mainly from the elderly and from women.

We comprise an area that is unique. It is brownstone, centrally located around the park, has easy access to shopping, to medical services, to employment. When people are forced to relocate from areas like this, regardless of the financial consideration involved, it is very difficult, especially among the elderly. Most of them fear that they will be forced to go to the suburbs, which are not designed for pedestrian-type activities. There is also the financial fear of the income property owners and businessmen who are going to be losing their buildings and be unable to get suitable replacements.

We also fear the creeping decay that will come into the area as a result of the arterial. One of the purposes of this arterial is to bring cars to a complex of office buildings being built now by the State of New York. It is estimated that 14,000 additional employees will be working there upon completion of the project. Without adequate facilities for parking even now,...you can easily see that we expect the cars to creep out of the area and, in general, make for low-quality type ventures like parking lots, quick-lunch taverns, and so on. We feel that it will be a very short time before a slum will overtake our neighborhood.

Another factor is what we call the commotion syndrome—the fear of massive construction for two or three years. When a road was being built about 40 years ago, I can recall groups of Italian workmen working with small granite blocks, working from 8:00 to 5:00 and then going home. Now it takes bulldozers, cranes, trucks, shovels, pile-drivers, hoards of workmen all flooding into the area, each one of them with a car, noisy and dusty in dry weather, sloppy and muddy in wet weather and, in general, life is made intolerable. We feel that life is just too short to bear this when it is unnecessary. We will be unable to get our cars near our homes when we go shopping, and we feel that should be a privilege of the city dweller as well as the suburbanite.

Another matter of equal importance is the loss of tax space. We estimated that there will be $3 million removed from the assessment roles of the City of Albany. We think it cannot afford this. It needs this money to provide services for the people that remain in the city.

We suggest that there are other forms of transit. We should like to get away from the one-man, one-car concept and have people get back into buses, perhaps with peripheral parking facilities at strategic points and funneled in with fast shuttles. We would like to see this city revert back to what it was before the exodus to the suburb—a pleasant place to work, to live, to raise a family—and not just a place for suburbanites to come in the morning and leave at night. Perhaps, if we make it attractive enough, we could even lure some of the suburbanites back and this could logically solve many of the other problems besetting this and other cities.

And then in the matter of self-interest, many times we are accused of self-interest or selfishness. We would like to point out that it is certainly self-interest to want to live in a community that you have become accustomed to, to look on the street and see a friend that you have seen for many years, and to know that he will remain there. And it is an understandable reaction. As a matter of fact, everything is a matter of self-interest. How about the self-interest of the road planners and the road builders whose very existence depends on a constant flow of road projects? That is professional self-interest at that. We would like to see a little more emphasis placed on the argument, rightfully or not, of the greatest good for the greatest number.

Daniel Schloss

About three years ago I decided to give up my lumber business and lease the parcel of property on which it was standing. I found that prospective tenants would not pay me a fair value for the property because the city papers had already indicated that this parcel would be in the pathway of an east-west expressway and, therefore, I could not give them a long lease.

Every time I bought a piece of property I have found, at a later date, that it was in the pathway of something that needed it. But being in the pathway has not helped me a bit. I still have not sold the first piece of land.

The method in which the government acquires property is most unfair. I have owned a piece of property for 15 or 20 years that I have improved. I first got notice, in about 1966, that it was going to be condemned and that the property was going to be taken for a housing development.

I own a home where I had 100 acres of land purchased 13 or 14 years ago. I retained one parcel of land for myself and sold the rest to a builder for $4,000 an acre. That land is now worth $10,000 an acre only because the state has decided to put a beltway in close proximity to it.

The movement of people is an extremely difficult problem. I have lost some tenants because they could not plan their improvements. Since nobody knows when the ax will fall, I have found it extremely difficult to get proper tenants. It is a sword that is always hanging over your head and makes everybody who owns a piece of property, or anybody who is a tenant, simply afraid to make a move.

If you wish to help these people who are having these problems, you should set aside land before you take away land. You should establish rent policies if you are going to complete substitute buildings for them and they should know that, when the time comes that they will lose their particular building or their tenancy, they have land to go to.

Discussion

Paul Ylvisaker

You have now got the measure of us. I have tried to understand and reform the system. There are two here who are trying to beat it. And one who decided if he could not lick it he would join it. So we have variety here. I would prefer that we now spend the rest of the time for questions.

Ali F. Sevin

I would like to address my question to Mr. Ylvisaker. You started talking about the different systems—systems of housing or systems of economic postures. When you got into the urban transportation planning process, you said that perhaps we should move away from the technologically or technically oriented processes. I would like to suggest that the state of the art in urban transportation planning is the best systems analysis tool yet devised to deal with human behavior rather than physical systems behavior such as space vehicles and what have you. So I detected a sort of ambivalence, shall we say, in your statement. I thought you were going toward more system-wide approaches, more systems techniques. Then you rejected what, in my opinion, is the best systems approach to transportation. Could you elaborate on that?

Paul Ylvisaker

Well, there is something of an ambivalence, because I do not want to be completely destructive on the present technology. I have watched this technology now for 15 years. I have had to help support it, help understand it, probably help work with it and, now, tried to extract from it something of use. I am not extracting much of use, as a net product, from much of the technical work that is going out, except an elaboration and a redescription of past trends and conditions that we cannot live with anymore. On net, I think that another kind of planning system is what is emerging in the rough and the ready. And I do not say we now go back from the mind to the stomach or the gut reaction. But there is a wholeness of response that comes through the very hearing processes that we are going through. Advocacy planning and this kind of work has a real role to play and I have come to respect the political process. I really think that the state of the art, as I have seen it in its matrix, still has not included many of the items with the weightings that have to be included. And when you finally push the machine and out comes the answer, it is not providing us with the things that we need to keep this society together. As a matter of fact, I have found sometimes that there is a bit of Gresham's Law applying to the present technical work. The cheap drives out the dear.

Gene E. Willeke

I would like to ask Miss Humphrey what her response is to Mr. Milano's presentation here. Any aspect of it that you would like.

Mattie Humphrey

To the extent that he has a family himself—as a human being with some kind of integrity that speaks to a sense of community which he holds very dear and which grows out of a particular context—to that extent I identify with him. He is on the trail of developing a sense of community. I feel that I am a part of a community that already realized its separate existence as a community completely outside of the value systems of the decision-making community, which is to say, opposed in many fundamental ways to the present apparatus. So I take no issue with him except that I hope he continues to grow. If what you are doing here reverses the experience I have had as a citizen trying to evolve in a community, then he may never feel the way I do. But I cannot identify with his position.

Ernest Milano

I think that essentially some of my aims and views on this are the same, except that Miss Humphrey's are much more acute. Mine are not vital to me. I can be moved. I can be pushed around a little bit and it will not destroy me completely. But I do not think you can do this to Miss Humphrey.

Mattie Humphrey

Right. He still has options, and I am in a survival struggle.

Lewis Hill

As Miss Humphrey concluded, she said she was ready to settle for basic human values. I would like to know what those are.

Mattie Humphrey

Well, a certain amount of air with a certain amount of oxygen in it. And already the automobile, you know, mitigates against that. A certain amount of opportunity to harmonize my aspirations, my intellect and my physical being. This get frustrating when I am given imperatives about an American way of life that negates me as a physical entity and represses me as a member of a particular group and then makes my aspirations something completely outside my realm. If I want justice and kinship and love in my community, this is frustrated in the American context because I am told these aspirations have to follow something else called order.

Andrew Euston

I thought that your point, Mr. Ylvisaker, about the need for compensation for other than those within the alignment, is the critical point of a conference like this, and certainly in the context of the three witnesses you have for impact. I know a lot of people here are concerned about it. It is my concern, too, that what we are talking about is

a problem for which none of the federal agencies have answers at the moment. We are talking about an order of compensation and an order of new programs that do not exist now. We cannot deal with this problem in terms of joint development funding, which the Department of Transportation is legally permitted to exercise. We cannot deal with it in terms of their concepts of compensation, even though they are better than the Department of Housing and Urban Development's compensation provisions. We need to have an order of problem-solving that takes into account interim use of land on a very sophisticated basis, that provides businessmen and home-owners with mortgage guarantees and funding for home improvement even while the threat of decision-making goes on. We have to have programs that provide for upgrading the sense of a community, that it is getting better even while construction is about to happen or is going on. I think that your point is the central one and no one here can really address the theme of this conference without talking about the new legislation that is needed. I wonder if you could address that question.

Paul Ylvisaker

The new legislation has to go much broader than the games we have so far structured for bureaucrats to play. It certainly has to be, I think, a clear statement about where we are going to build all this housing. It has to be outside the central cities if you are going to go into mass basis. First, I would like to see a new town policy that is really a new town policy and not a subordinate paragraph in some major legislation. Second, it is not just a matter of legislation, it is also a matter of funding. The funding levels this year, as "Fortune" magazine points out, are ridiculously below where we will have to be. Third, we are dealing with an apparatus. In New Jersey, one of the more progressive states, we have not changed our land-use legislation. We do not allow what New York does, which is site acquisition. There is no such thing as a declaration of a housing emergency area where one can work over other jurisdictions than just the limited one of the central city.

I know that Secretary Romney right now is anxious to move model cities from the neighborhood to the total city area. We all voted for model cities, much against our own minor bureaucrats because we wanted that perspective even though Secretary Romney was not offering a larger budget to go with it. I just do not see how you can handle one neighborhood without working in a larger part of the city. But model cities would still stop at the city boundary and, within that framework, you are not going to solve it.

This is why I go to income maintenance programs. I have a basic skepticism that the public bureaucracies are ever going to get structured so that they can deliver as effectively and as fast as a citizen on his own. Here I complete the circle, starting as a New Deal-Keynesian liberal and go all the way around to a touch of Adam Smith—that a free dollar in the hands of the consumer means an awful lot. And, frankly, if we could get all of Mattie Humphrey's people up to where they have a decent income, freely disposable in their own hands, then they can go in the market.

I have listened to the two other gentlemen here and I like them, but I do not bleed for them. I have a feeling that, within the accidents of a major system operating as it must by democracy's majority rule, they can make their way. There are going to be some real pains, hardships, and things done that we regret. But, basically, we have to get our citizenry to the point of free choice—and universally—so that if this administration does no more than to listen to Pat Moynihan and he gets up there and says, "Let's make this one an income maintenance jump," then, change the social security system and that is it. I think we will have done a great deal to alleviate your problems and all the other bureaucratic restrictions.

First Workshop Reports

Conference participants were divided into six workshop groups. The first workshop session was devoted to value identification, measurement and trade-offs, and the legal and social constraints relating to the development of transportation facilities.

The workshops developed tentative lists of transportation-associated values, lists of interest groups that might be important in considering community values, and possible methods that might be employed in measuring values, and suggested legislative modifications that might be desirable for more effective and equitable implementation of transportation plans. The workshop groups further provided some theoretical frameworks in which community values could be determined and some working definitions of concepts related to valuation.

Only brief extracts of the workshop chairmen's reports are presented here. The bulk of their reports either has been summarized in Part I of this volume or has served as a working basis for subsequent discussions and workshop proceedings.

Allan Feldt

Values may be vaguely said to reflect the needs and interests of various groups and to be relatively stable over time. Different values are possessed by different groups and different values occur at different levels of group identity and organization. That is, conceivably the same person may hold different and even possibly conflicting values with reference to several groups he may belong to....

In our workshop, we drew up a tentative list of 20 values. Another workshop has a list of 25 or more. There appears to be some similarity between the lists. I will simply go over the list of what interests seem to operate as values in the micro-communities on the level of the neighborhood and possibly on the level of the individual within the neighborhood. This list was broken down into those values which probably were most critical to two different classes of population—one essentially white and middle-class and the other comprising any significant minority, such as the black community within our society.

The first set of values consists of those that appear to be very important to the black community and other minority groups within the society. These are (1) a sense of community, (2) personal identity, and (3) territoriality and local boundaries. By the sense of community is implied the ability to recognize persons living near you as being fellow residents with whom you are mutually dependent for facing the larger society and whose resources you can use in a group fashion to improve your life chances and cope with problems such as, for instance, a freeway proposal.

The sense of community has apparently been neglected in much work in planning urban renewal, and so forth, and is probably the single most important development of the current struggle for black rights in our society. The sense of black community, for example, is a very strong element. We also agreed that there are other kinds of communities that exist in society that tend to be more relevant for middle-class whites—communites based on common professions, common church groups, and so forth. These usually do not arise in any particular locality within a city and therefore we decided to ignore them since they would usually not be reflected in a freeway development situation.

Linked to the sense of community are the related questions of personal identity and territoriality. Personal identity embodies the ability to recognize one's worth as an individual human being and the ability to relate oneself as an individual to the larger

society in a meaningful and personally satisfying fashion. Territoriality refers to the value attached to the recognition and proprietorship over some portion of urban space that may be readily identified as belonging to some individual or small group of persons. In this regard, the importance attached to local neighborhoods and the pride of home ownership and family efforts at home improvement are often overlooked in relocation efforts. Many studies have clearly documented a surprising attachment to particular spaces within the urban area regardless of their more obvious physical and economic properties.

Another value of particular importance in a black community is control over their own destinies—some ability to exercise influence over how decisions are made and who makes the decisions. This can go all the way down toward old ward political machines most currently reflected in the Ocean Hill-Brownsville School decentralization issues—the desire and necessity to exercise control over the local neighborhood.

Also of great importance to working-class and black communities and underprivileged groups is accessibility to employment, either localized or within the larger society. Accessibility to employment is especially important to these groups because they do not have excess money to spend on additional travel costs.

Finally, a value of particular importance to the black community is that of stability and the security of an area. Too often the most significant incursions of the larger society upon a local black community appear to come in a totally uncontrollable and destructive fashion in terms of slum clearance, urban renewal, and highway development projects. Some ability to understand, anticipate, and perhaps divert such developments in order to provide a stronger sense of local security seems of great importance to localized black communities.

Important values shared by both the black community and the white middle-class community include, of course, the basic environmental elements: reasonable levels of purity for air and water, relative lack of congestion, and a suppressed noise level. There are a whole range of values of this type. Both of these societies would be especially concerned with protection against financial loss or the posibility of financial gain in their home investments or in any local businesses.

That completes the list of seven or eight values crucial to the black community. Only two of these, I must point out, are also likely to be of equivalent concern to the white community.

Other values important to the white community include general accessibility to the city—general mobility. The accessibility needs of the middle class are seen to be different from those of the lower class. This group is concerned with being able to get out into the city with some ease for a general range of purposes; employment is not the crucial element.

The middle class responds to the problem of historical preservation and to architectural factors within their area, whereas there is a relatively low response by working-class groups. Questions of child safety—whether the streets are busy, whether the sidewalks are protected, whether the area is safe for kids to play in—are very important to the middle class and they would react strongly against changes in levels of safety.

The middle class responds to whether or not the area is homogeneous or heterogeneous. Which way they respond, however, is not as clear as might be thought at first. Not all middle-class persons want homogeneous areas. Finally, many members of the middle class attach considerable importance to questions of social status. A high value is attached to having a "good address".

There are five additional values held by both groups which did not seem to be generally as important at this particular moment in time. One is the ability to become involved in local activities, in government affairs, and so forth. Another is the question of the quality of the neighbors; whether they are friendly or unfriendly, either alternative possibly being desirable. The availability of localized facilities within the neighborhood—parks, shopping, schools, churches, and so forth—was considered important but not crucial except by the working class. The capacity of the area to provide adult socialization—societal integration—was another perceived value. Also, the functional compatibility and efficiency of different kinds of elements within an area is generally of value, although not critical.

In conclusion, I must point out that our group tended to agree that virtually all of these values are held to some extent by both white and black communities. The important consideration is rather the extent to which one group or another places greater importance upon one set of values as opposed to some other set.

Joseph Schofer

A variety of communities, defined not only in a spatial sense, but considering socio-economic characteristics and roles, have to be considered in decision-making. It was a consensus of the workshop that pretty much the same set of basic values ought to be considered at all levels, although their relative importance might change as the level shifts.

Our group concentrated specifically on transportation-associated values relating to things like mobility, opportunity, and variety. We came up with two categories of values: those associated specifically with transportation systems and those associated with the environment, the neighborhood and the community. We recognized that there would be trade-offs—the primary ones taking place between these two sets of values, if we have categorized them in a reasonable fashion. In addition, trade-offs would occur within each set.

Under the category of transportation-related or transportation-associated values are included accessibility (Is it possible to get from A to B?); travel time (How long does it take to get from A to B?); reliability (What is the probability of completing a trip as expected?); convenience (How convenient is the alternative transportation system for a trip from A to B?); choice of location (Does the transportation system provide a choice of things like residence, employment, and industrial locations?); comfort; safety (What are the probabilities and consequences of various kinds of accidents and, also, what is being done to ensure freedom from criminal assault?); cleanliness (Can clean air be associated specifically with the transportation system?); absence of noise and absence of vibration; beauty; diversity (Is there a choice of mode for a particular trip?); flexibility (What are the costs of changing from operating policy A to operating policy B?); understandability of the transportation system (Is the transportation system designed in such a way that the user is able to visualize it and easily use it?); reallocation of resources (If transportation systems are going to have effects on the reallocation of resources, is not this something that ought to be considered as a primary value in transportation decision-making?); mental and physical health; and costs such as capital cost, maintenance cost, and operating cost.

Values associated with the general characteristics of the environment in the community are even more highly overlapping than the previous list and include protection of property investments, preservation of social stability in the community, preservation or enhancement of the cohesion of the community, convenience of access and activities, avoidance of commotion and preservation of personal privacy, institutional preservation, preservation of community services, preservation and enhancement of community safety, avoidance of disruption of emotional involvements with home, neighborhood, and community facilities, avoidance of a feeling of uncertainty (particularly in relation to concerns about proposed projects and houses that are going to be built and where and when they are going to be built), maintenance of the feeling of personal and group security, maintenance of feelings of status, the absence of noise, the absence of vibration, beauty and aesthetics, egalitarianism, preservation of social choice, provision of adequate shelter, and provision of employment.

We focused for some time on our ability to measure some of these values and the degree to which proposed systems are conforming with these values. There was some general feeling among us that measurement problems were perhaps not as difficult as we might have felt before we came to this meeting. The problem that is going to be most complex is that of trade-offs and resolution of value conflicts. Although it may be possible to measure the relationship between proposed transportation modifications,

predicting how a new system will affect a set of values is going to be much more difficult, particularly where we have to measure values and relationships between systems and values in subjective ways through use of attitude surveys.

We also drew up a list of interest groups that might be important in considering community value impacts. We were concerned with the contingency of values on the definition of community and these groups represent a set of alternative ways of defining community. In another sense, this might be called a set of roles that ought to be considered in transportation planning.

These groups include users; non-users; ethnic groups; social groups; central city dwellers; suburbanites; drivers; non-drivers; owners of cars; non-owners; displaced entities such as individuals, families, industries, commercial organizations, institutions, and others; black people; white people; the propinquitists, a new word coined in our session meaning those people who are near facilities although perhaps not dislocated by them; politicians; planners; transportation engineers; special interests such as the oil industry, construction industry, the rail people, the transit people, manufacturers and suppliers, the aged, the young, the infirm, the poor, the rich, the deprived, the tourists; insurance companies; people with different levels of education; people with different levels of family status; industries in general (not necessarily those that are dislocated by a facility); commercial organizations in general; investors (perhaps we mean speculators); institutions such as schools and churches; political parties; home owners; renters; apartment dwellers; single-family dwelling unit dwellers; the automobile club; the customer of commerce; and a group that we called simply opinion leaders.

S. M. Breuning

During the first workshop our group addressed the four topics given. We decided that rather than develop long lists, it would be more useful to define value categories and to identify priorities of them. We were more concerned with delineating the breadth of the problem than with exhaustive detail.

First, we considered community values in the transportation planning process: (a) representation and participation in the decision process, (b) the sense of community, (c) equity of mobility to all, (d) provision of opportunity, (e) conservation of resources (financial, human and natural), (f) flexibility and adaptability of the transportation system, (g) alternatives available now, and (h) changes over time.

Next we talked about measurement of values. People have many values, some of which conflict. We listed the kinds of things that one should try to resolve in a transportation study: (a) do not try to make policy; (b) create alternative new facilities or new operating strategies; (c) provide information services regarding transportation; (d) suggest controls if you cannot do anything else; (e) protect certain interest groups that are otherwise not adequately considered; (f) determine non-market factors involved in the transportation process; (g) try to predict human behavior.

What is the role of values in the design process? We identified the feedback and iteration process between the client and design agent. We recognize that the two can take a variety of forms depending on the client being served. Then we discussed the use of values in transportation decisions. We identified design analysis and we looked at the hierarchy of goals that underlies the decision process. What role can transportation play in satisfying the needs of urban life? How can we physically or politically satisfy these transportation goals with a specific system? With some structure for the analysis, one should eventually be able to put the measurements and the definition of the trade-offs in context.

What research is needed to measure values better? We put everybody's pet project on a list and tried to get some sense of the breadth of the problem. We need research into adaptive planning. How does one really relate planning to the community? We have had striking examples of how this can be done. How can one predict professional

and human biases? What role do market factors play in transportation? What impact does transportation have on specific areas like the central business district? How does it affect personal values of the individual? More specifically, what is the value of relocation? What role does mobility play in providing human satisfaction?

Allan Jacobs

We started out trying to define what we meant by community. We decided that communities could be defined by interest, of course, and by geographic areas. Both descriptions or definitions would always be operative. We started from the geographic description, but are fully aware that within and without such areas there would be any number of communities that might be defined by their interests as well. Regarding values, we came up with a working definition that might take on more importance when dealing with the question of measurement: A value is something that an individual or a group holds to be important or cares about. These values would be identified and perhaps measured in a process. They would be measured and identified via human interaction. And since these values might change over time or intensify or decrease, the interaction becomes all-important and the interaction has to be continuing.

In terms of measurement, we talked of course about such things as attitudinal surveys, but the sense I got was that the more direct interaction in identifying and measuring values—call it confrontation, call it participation, or call it simply working in communities or "doing your thing"—was the better approach. These were the items or the phrases mentioned most often in a dynamic process of measuring values.

The transportation facility, especially a freeway, it was observed, would quite often be viewed as an intruder. This might be so indeed with a rapid transit facility as well. Anything like a highway that starts from a larger or broader community is likely to be perceived as an intruder in the smaller community. This almost automatically sets up the need for compensation in the smaller community.

We spoke briefly in this regard of the problem of "What does the facility or project do to me?" and "What does it do for me?" It is usually in that order that the perception occurs, at least to the primarily non-user. In most cases this will often imply something negative and if so, and if that is all it does, then the community will respond negatively. The "for me" may be something positive or it could be neutral. If what the facility does for me is greater than what it does to me then perhaps I would be for it. But just the sequence within which the "to" or "for" is perceived is critical, and may indeed imply something as to strategies, tactics and working with people toward the achievement of any kind of a facility.

In the second half of our session, we spent more time on the city than at the state or national level. Values at the city level seem to be the political value of a veto or home-rule, and this was held to be of considerable importance. For the central city, its centrality or its economic base is of high value. Other values, such as identity, character, and accessibility, were noted. These seem to all come down to two basics. First is to provide for community values to be achieved; i. e., it was the value of the city to provide for community values, or to cater to the values of its members. Second is survival. Another method suggested was to categorize corporate values, standards of services, self-identity or image, and ability to deliver. We did not get too far with that. The group seemed to be a lot less firm when it came to identifying state or national values related to transportation or land development. Accessibility for accessibility's sake was questioned. State growth was raised and questioned as a value. And jobs and construction were mentioned and questioned as values.

A conclusion related to user and non-user benefits and possible trade-offs seemed to be that the users of major highways, if they wanted the facilities, would increasingly have to pay the social costs of those facilities—the social costs of public enterprise, if you will. This might increasingly be the trade-off; if one wants a facility, one will have to pay for or cater to a lot of community values related to that facility.

Kenneth Shiatte

Our definition of a value is an attitude, a concept that we hold dear. Out of this attitude come goals or objectives that we can then relate to the physical development of proposals. We tended to feel that we had to treat values in categories. We listed five categories: (a) mobility, dealing specifically with the transportation aspects themselves; (b) stability, the desire not to disturb or fragment the neighborhood; (c) the environmental aspects, the desire to minimize noise, air pollution, and other things detrimental to our living environment; (d) economic aspects from the community standpoint; and finally (e) quality. There was one value item that ran across all categories. It is the value of self-determination, not only from the community standpoint but also from the individual.

Our charge was consideration of legal constraints. Joint development has really brought out the need for having new legislation—on the state, county, or city level. More may be required at the federal level. It is not good having the authority to spend capital if we do not have proper funds made available for total involvement in the development of the plan and design of the capital projects.

We also need more permissive legislation to foster the nonprofit or public involvement in development and redevelopment of areas.

And finally, we want to ensure that we have a legal basis or authority to go back and develop or redevelop the air rights and subterranean rights on existing facilities.

Our next area of concern was administrative constraints. There is a fragmentation of responsibility among many agencies. How can we achieve a balanced transportation system when we have one agency responsible for transit, another responsible for highways? There is a narrow interpretation of regulations or policy guidelines. There is a lack of coordination between agencies. There is a real need for decision-making at appropriate levels.

We must have provision for public involvement. Some neighborhoods are organized, particularly in the instance of model cities, and have channels of communication. We must be sure that the citizen-at-large has a like chance.

There is an inconsistency of arrangements for administering programs. These vary all over the ball park. One example is the ability of a state to administer highway funds from the federal government although, in an allied area of mass transit, the city or county can go directly to the federal government.

If we are going to get into more flexible project development, we must eliminate the present dedication of funding. This builds in imbalances in programs.

The difficulty of evaluating the relative merits of transportation in relation to other public endeavors is another problem. Here, we have to get into the proportioning of total community resources based on community values. The satisfaction of all community values can go well beyond the available resources. Where do we limit the resources in relation to a particular project? And, how do we get around the problem of losses to one community, short-term or even long-term, to the benefit of a neighboring community? There must be some type of regional accounting of benefits and debits so that one community is not asked to give up everything for the benefit of the rest of the region. How far can we bend a project out of the way of certain inviolate types of neighborhood buildings or other values? We have no answer but we certainly must develop some criteria so that we do not lose project effectiveness in terms of traffic safety and service. Finally to be considered is the constraint of understanding the true implications of the project by the citizen or the community. This also holds true for the planner and engineer so that we can correctly interpret community values.

Thomas H. Roberts

The group felt that, especially at the metropolitan scale, there is a need for an articulation of metropolitan awareness, or what Father Howes called metropolitan morality. And, indeed, this might in itself be either a value or certainly have an effect on the perception of values.

We discussed different ways to approach the trade-off value questions once they are identified. First, we identified the one obvious way: Once you have a list, assign weights and strike a balance on paper, which someone in the group called the numbers game. I think the group generally felt that the better way was to identify and describe the various specific proposals and their impact as fully as possible and then to rely on the political arena of the citizens and their leaders to assign their own values and to trade them off within this process—the political process.

We tried to identify the constraints that might restrict solutions and it was quite clear that the major constraint at the metropolitan scale is the lack of a metropolitan decision process. There was a good bit of discussion about ways to overcome this. An obvious way was to set up some form of regional or metropolitan government. Where it is not available or where it does not exist, there was no consensus at all as to whether it would be desirable to try to get a metropolitan government. State government obviously is the next highest level embracing the metropolitan problem, or an interstate compact in those situations. Voluntary metropolitan councils of government were certainly no substitute for a hierarchical power mechanism. It was agreed that this kind of a loose cooperative metropolitan approach, which has been fairly common, does not work at all or works least if it is largely a technical or a professional effort; it must have serious and constant political involvement and commitment. And, even then, it is going to have some limitations—political turnover, jurisdictional rivalries, least common demoninator type decisions, and so on.

In some cases metropolitan government may provide a metropolitan forum for value trade-offs through political bargaining among jurisdictions, and in order to have a bargain struck, you must have something I want and I must have something you want and we have to be willing to trade. This can be a housing problem in one area, a transportation problem in another area, solid waste sites that this area needs and that you have, and so on. It was felt that the federal government's role as a carrot and stick could certainly encourage this kind of metropolitan trade-off or bargaining process as, for example, in the potential funding of Section 205 of the Demonstration Cities Act of 1966. There are other precedents that you know about—the bonus for two governments jointly developing a common solution to waste treatment plants, and so on. But whatever the mechanism was, the useful staff function is to feed information and organized analysis of metropolitan needs and options to the decision-makers in this metropolitan area.

We were then asked to examine the impact of metropolitan problems on local problems of transportation and community values. It was suggested by one that here we should look first at the three relationships of transportation and land use: namely, that transportation serves land uses; transportation is in itself a land use; and transportation shapes land use. This kind of relationship should be used more at the metropolitan area because of the leverage transportation has to shape the region. And in that way it would shape and affect local values, along with other strategic shapers like major utility systems. One impact of metropolitan problems on local values is that metropolitan problems affect the component jurisdictions differentially so that every jurisdiction is going to view these things at its own level and from its own jurisdictional viewpoint. And that is why some kind of metropolitan trade-off mechanism is needed.

There was considerable feeling that the timing of metropolitan transportation facilities has an important impact at the local level. That is, it is not only what you do, it is when you do and in what order you do it—whether you put a freeway in place early or late and before or after a residential settlement. The general feeling was that, while long-range planning should be broad and very tentative, allowing for later changes in the situation whether technological or social, short-range planning should be specific and should move rapidly into execution once it is established. What we are trying to avoid here is the old situation where you have a downtown link of a freeway that has been planned for years as a part of a freeway net but it gets built last and you have an agonizing 10 years—situations change, attitudes change, and you run into a deadlock. Therefore, long-range planning at the metropolitan level should be broad and tentative; short-range planning should be quick and positive. If it is not done quickly it may not be done at all or the whole thing may have to be re-examined.

Part V
The Issues: An Overview

Three Conference papers examine the issues of transportation and community values as problems of social and political adjustment. Dr. Altshuler takes the viewpoint of a political scientist. Mr. Hand looks at the issues as a planner whose prime concern is with social values—the building of communities where there is trust and participation as well as adequate physical surroundings. Dr. Olson urges the need for the measurement of social condition through the use of "social indicators".

The Values of Urban Transportation Policy

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Although the subject of this Conference is transportation and community values, this paper concentrates on national policy. Permit me to explain why.

I came to my current interest in the politics of urban transportation from studies of the politics of city planning (1). Conventional city planning is regulatory. It strives to discipline and channel the initiatives of others, but it is not itself a source of energy or capital. I had become convinced that regulatory planning could rarely have a substantial impact on American urban development. For reasons deeply rooted in American culture and governmental structure, contests between public regulators and private investors generally culminated in the triumph of the latter.

Public investment seemed to have a much greater potential for shaping urban development. By far the most massive and influential public investments of the moment were those in the field of transportation, most notably the Interstate Highway System. And so I turned to the study of urban transportation policy.

To one fresh from the study of relatively impotent regulatory planning, the most striking things about the Interstate Highway program were (a) the boldness of its plans, which were only mildly constrained by existing land-use patterns, and (b) the regularity with which they were implemented as proposed.. It was quickly apparent that these features were products of the funding system. Local governments had never, so far as I could ascertain, used their own resources to drive new highways through developed neighborhoods. Only the advent of 90 percent federal aid had induced states to do so. And the availability of 100 percent federal-state aid had tipped the balance of nearly all local political systems in favor of letting it be done.

This is an observation about American local politics, not about the desirability or popularity of the Interstate program. But it is an absolutely vital point, and it goes far toward explaining why I have focused my research on national policy.

The tendency of American local government is to be conventional in its thought, timid in its action. Particularly where the need to tax is combined with controversy about the proposed expenditure, the instinct of local officials is to opt for inaction. Is local government responsive to demands by the poor? It depends on the issue. Local authorities have done little to redistribute resources, and contend that they can do no more. The reasons they cite include tax competition and the fact that rich and poor are typically in different jurisdictions. But local government is in general very responsive to neighborhood groups, rich or poor, that want to veto proposed programs. This is particularly true at the metropolitan level, where central authority is lacking and most autonomous local jurisdictions themselves look like neighborhoods.

It is worth noting in this connection that most Americans still live in relatively small jurisdictions. In 1960 only 22 percent of the national population lived in jurisdictions larger than 250,000. One who lives in a jurisdiction this size or smaller can exercise a great deal of "veto" influence if he seems to speak for several hundred people. This is a substantial source of grievance in big-city neighborhoods whose objections to highway proposals have been overridden. They believe that a similar number of objectors would have prevailed in the typical suburban jurisdiction, and that official local government support would have enabled them at least to bargain effectively with the state highway department.

When these big-city neighborhoods are black, their grievance is particularly intense, because it is tied up with so many other grievances, and because the concentration of blacks in central cities is widely perceived as a product of discrimination rather than

free choice. (This is not to say that the central cities with large black populations would have built freeways in the absence of federal aid. Given their density and their financial straits, they would have been particularly unlikely to do so.)

It is precisely because the forces for inaction on large-scale and controversial matters are so strong at the local level that state and federal initiative so frequently seem warranted. I am far from opposed to such initiative, but I am extremely interested in the development of grant-in-aid approaches that make innovative and large-scale projects possible, yet are sufficiently flexible to accommodate varying local needs and desires. It is possible for federal and state aid to invigorate local government rather than to supplant it. But this requires the most careful discrimination between those aspects of policy that require federal or state uniformity and those that can safely be varied in response to local preferences.

The vital point to keep in mind is that the structure of choice has a profound impact on the substance of what is chosen. The economist James Buchanan wrote a marvelous article some years back in which he compared the sorts of choices people make in the market with those they make in politics (2). In the market choice situation, he argued, they choose from among the goods and services presently available; they take the overall framework of choice for granted; they assume that their choices will have no impact on the behavior of others; and they express their personal consumption tastes. In the voting booth, they are more inclined to consider what might be, to evaluate the system that shapes the opportunities of individuals, to think about their willingness to bear a portion of the cost of collective endeavors, and to express their values. Similarly, many students of political representation have noted that the same electorate will choose very differently using different electoral procedures: e.g., parliamentary vs presidential system, at-large vs district elections, single member vs multi-member districts, gerrymandered vs equal and compact districts.

All of this is extremely relevant to transportation policy. Highway engineers are fond of saying that the existing federal aid highway program is the product of Congressional decision; therefore, it reflects the democratic will. This is true insofar as it goes, but it does not go nearly far enough. It neglects considering alternative ways in which the public will can receive expression, even within the American political system as currently structured.

If one really cares about the vigor of local government and the expression of community values in transportation policy-making, he will be led to ask such questions as the following: What would happen if the voters of each state were offered a choice between four or five different levels of highway spending and taxation in periodic referenda? What share would highways get if the federal government aggregated all its current aid programs and distributed the sums involved as block grants to the states and localities? How widely would the share vary from state to state, and SMSA to SMSA? Alternatively, what would happen if the federal government aggregated its transportation aid programs and invited the states to come in with investment proposals—the federal share to be the same (say, one-half) for all approved investments? What if the same invitation were extended to metropolitan councils of governments? To cities?

To ask these questions is to recognize that today's transportation plans are products of a structure of choice, not simply of the democratic will. This structure may or may not require alteration, but it should not be taken for granted. There is a need for constant re-evaluation of its adequacy, particularly with reference to the question: Does national policy leave sufficient scope for state and local preferences to make themselves felt?

Let us turn now to the subject of participation. Some administrators deride citizen participation because they have seen it operate only negatively—i.e., with the aim of vetoing projects. In part this is because highway agencies have made little effort to enlist citizen involvement in their positive planning efforts. But in large part, let us agree, it is because the average citizen can be activated politically only by a severe and immediate threat.

This should suggest something to us. If we value participation, and if most citizen participation is reactive to perceived threats, we should be anything but contemptuous

of "negative" participation. On the contrary, I would argue that it constitutes the very heart of modern democracy. Most initiative in each sector of policy belongs to men who work full time within it. The system's democratic aspect lies in its mechanisms for enabling aroused "amateurs" to constrain them.

The tendency of citizen participation to be negative, then, is anything but peculiar to the highway program. Individuals do not relish being trampled in the name of progress. We may compare the resistance of neighborhood groups to highways with the resistance of labor unions to technological innovations that appear to threaten jobs. Every union in America is oriented toward achieving some control over the rate of innovation, so that its members will not be victimized by the technological forces that are changing this society's skill requirements at a fantastic rate. Neighborhoods do not organize as systematically, but when threatened their reactions are similar.

There are special reasons, of course, why government should be compassionate in its dealings with the victims of its projects. First, the public expects it to set standards of ethical behavior for other institutions to emulate. Second, the government has the power to compel. Private developers cannot force unwilling property owners to sell; thus, they often fail to obtain the land they want, or do so only by paying exorbitant prices to the more reluctant sellers. Those in the path of public projects cannot gain much by holding out individually, but they can in some circumstances gain a great deal by mobilizing politically.

Until the advent of large-scale urban renewal and of the Interstate program in the 1950's, the exercise of eminent domain in densely settled areas was minor in scale. It typically involved a few properties here, a few there—for schools, fire stations, etc. Thus, it is only in the last 10 to 15 years that the politics of resistance to public land taking has become a salient feature of the urban scene. As the largest taker, the highway program has naturally become the central focus of this political activity.

In considering the response of highway agencies to community protests, it is worth keeping their history in mind. Their clientele prior to enactment of the Interstate program was almost exclusively rural. They developed their philosophies, styles, and procedures without ever experiencing significant relocation controversies. Then, in the mid-1950's, they were propelled massively and suddenly by political decision into the urban arena. A few stray intellectuals issued warnings that driving highways through cities would prove quite another matter from driving them through the countryside; but it takes more than a few articles to alter the character of settled institutions. No key political leaders heeded these warnings, so it is hardly surprising that the operating levels ignored them.

The normal thing in America is for each public institution to reflect the values and interests of its regular constituents. Controversy arises when new constituents are encountered who insist that their values and interests be accorded great weight. The first instinct of every institution is to resist such demands. They are perceived both as threatening (at very least, to its mission as currently defined) and as contrary to right reason.

We in the academic community are confronted by the challenge of new constituencies no less than are highway agencies. At the University of Wisconsin, for example, the administration and the state legislature have been resisting black student demands for the establishment of a black studies program. Recently the black students have emphasized that the University already has a Scandinavian studies program. This latter was authorized by the legislature decades ago, apparently without controversy. The legislators were well-accustomed to expressing the values of their constituents of Scandinavian descent.

Examining controversies generated by new constituent groups in the field of urban transportation these past several years, I have increasingly become persuaded that efforts to pinpoint blame are fruitless. What is worthwhile is to ask: What are the most promising potential paths to reconciliation?

We have never been a crude majoritarian society. Our leaders have been oriented toward reconciling minorities, toward persuading them that a conscientious effort was being made to balance their legitimate interests against those of the majority. They

have recognized that social stability and peace depend on achieving a near-universal consensus on the basic decency of the system. This has become more and more important as we have become an urban industrial society—i.e., one so complex in its patterns of interdependence that it is susceptible to being paralyzed by the acts of tiny minorities (a dismal fact whose rate of application seems to be steeply accelerating).

Keeping this tradition in mind, I would suggest that the main plausible strategies of reconciliation in the field of urban transport are the following: (a) within the framework of current national policy, increasing the use of side-payments (e.g., replacement housing, highway depression, joint development) to enhance the palatebility of highway projects to neighborhoods in their paths; (b) also within the current framework, increasing opportunities for local citizens to impress their views upon decision-makers; and (c) changing national policy to offer much wider scope for the imaginative use of side-payments and for the expression of local values in transportation planning.

I have chosen in this paper to focus on the third strategy. I hope that these introductory pages have explained my reasons for doing so. In brief, they are (a) my belief that the root cause of unrest in the field of urban transportation is the rigidity of national policy and (b) my collateral judgment that the national interest—in social peace, citizen satisfaction, and efficient transportation—would be better served by a policy that left a great many more choices to the state and local political processes.

* * * * *

In the nation's more densely settled cities and suburbs, the highway program is in trouble. The charges against it have become so familiar that it should suffice here to identify them with brief phrases: unresponsiveness to the diverse needs and desires of its clients, inattention to external effects, resistance to meaningful participation by personnel other than highway engineers in the decision process.

By way of rebuttal, it is frequently noted that the program has been anything but static. Each of the charges is substantially less valid today than it was five or eight years ago. A plausible case can be made that efforts to conciliate the critics have gone too far, resulting in frequent paralysis rather than more praiseworthy action.

It is certainly true (a) that the spirit of resentment in threatened neighborhoods has spread, (b) that their capacity to organize, recruit allies, and secure favorable publicity has flowered, and (c) that the scope of their demands has widened, even as—and rather more rapidly than—the program has adjusted. To some, this merely illustrates that concessions are self-defeating: for every critic mollified, five more are energized. To others, including myself, the lesson is that even more rapid adjustment is called for.

The issue, needless to say, is one of value trade-offs. So I shall not try to demonstrate here that one or the other position is the correct one, either for any particular "here and now" or for all times and places.

What I shall do, rather, is to suggest a number of means by which federal policy in the field of urban transportation might be rendered substantially less vulnerable to the charges—without unduly reducing the potential for action. Is this feasible? In one sense, of course, the answer hinges on one's definition of "unduly". There are few ways, it would seem, to increase program flexibility, planning comprehensiveness, and democratic responsiveness without also increasing costs and delays. But we shall also explore an alternative hypothesis: That this is so only with respect to direct costs and the short run; that with respect to the overall societal costs and the longer run (several years and up) precisely the reverse is often true. The latter, it will become clear, is my own position.

I would add that the total resource base for urban transportation programs is likely to be greater if their support coalition includes the cities than if they are alienated from it. High appropriations are the products of widespread intense support plus the absence of serious opposition. In the 1950's, when appropriations for highways made their "great leap forward", the nation's big cities were squarely behind them. Their enthusiastic support may not have been vital, but their vigorous opposition could well have

proved fatal. The program is today too well established to be in danger of immediate curtailment. But over the years it may find itself in increasing trouble if it cannot be implemented in those portions of the country where traffic congestion is most severe. At the very least, increases will be much harder to obtain than they might otherwise be. Those concerned about priorities for national action will be looking elsewhere. They will probably, in fact, be examining the problems of the central cities, to see what their most urgent needs appear to be. Agencies and programs toward which the cities are hostile will be unlikely candidates for favorable attention.

What, then, are the steps that merit serious consideration as we seek (a) better to adapt federal urban transportation policy to the varying priorities of the nation's diverse urban areas and socioeconomic groups, and (b) to maximize political support for urban transportation investment? The issues are large, and will be with us for many years to come. Thus, I shall not be deterred by the present unfeasibility of some of the ideas that strike me as worthwhile.

Let me begin by noting that the policies of the leading in the Department of Transportation can make a tremendous amount of difference. If they give high priority to the values of democratic responsiveness and broad local option, the career bureaucracies will follow—though often less than instantaneously. But unless they do, none of the recommendations that follow will make much difference. The career bureaucracies can go either way, toward stubborn insistence that the old program priorities and procedures for dealing with critics are good enough, or toward creative political adaptation. They contain both strains in abundance, often coexisting uneasily within the same individual. Which will prevail will be primarily a function of the leadership they receive. At least so I judge.

The key policy directions that I wish to explore are the following: (a) that the systems of highway and transit finance be combined, if not totally then at least sufficiently to permit wide variations in the modal investment balance to fit diverse local circumstances; (b) that the highway program itself become far more flexible in the kinds of projects eligible for support; (c) that serious experimentation with street use pricing in highly congested areas be encouraged; (d) that the urban design concept team and multiple-purpose corridor development ideas be much more widely applied; and (e) that those in the path of new highways be regularly offered a greater planning role and (especially if they are poor) more generous compensation.

The items on this list, of course, vary considerably in the extent to which they involve fundamental changes in current law and practice as opposed to the extension of recent trends and pilot efforts. What unites them is their importance. In the sections that follow, I shall sketch the lines of argument that have led me to these proposals, and suggest more concretely what they might mean in practice. To conserve time and space, I shall omit the usual qualifiers. Let it be clear, however, that my purpose is to stimulate consideration of some general ideas, not to proclaim any hard-and-fast positions.

IMPROVING THE BALANCE BETWEEN HIGHWAY AND INVESTMENT

Federal aid for urban highways dates from 1944, has been massive since 1956, and currently totals over $2 billion annually. Federal mass transit aid, by contrast, dates essentially from 1964, and totals only $175 million a year currently. The upshot is (a) that the backlog of unmet transit needs is far greater than that of highway needs, and (b) that the current federal aid pattern tends toward widening the gap each year.

Since these may be viewed as fighting words, let me make a few things clear. First, by "transit" I mean everything from taxis, job jitneys, and carpools to rail rapid transit.

Second, I firmly believe that the future of transit lies with systems that utilize cars and buses, particularly those that can supply door-to-door service on demand. I see a strong case for improving the quality of the rail transit systems we already have in half a dozen cities, and for extending the lines in some cases. But the case for new rail transit systems strikes me as singularly weak.

Third, I recognize that transit presently carries only about one-fifth of all commutation trips in the nation's SMSA's and under one-tenth of non-commutation

trips.[1] I do not expect these percentages to grow. Neither do I consider their continued decline over the next several decades inevitable. I am struck by the fact that transit quality is far, far below what is technically possible at quite reasonable cost. I am struck also by the fact that most highway construction after completion of the Interstate System will be justifiable almost solely in terms of rush-hour needs. (This is not to deny that some new highway construction would be a pleasant luxury in the absence of rush-hour demand. But even today there is surely no congestion "crisis" in off-peak hours.) Yet in densely built-up areas new highway construction will often be politically unfeasible, and where highways can be built in such areas they will generally involve immense subsidies to rush-hour commuters from other drivers.

Finally, I am struck by what seems to me a moral imperative. In the course of opting for an automotive civilization, which provides unprecedented mobility for those who can take full advantage of it, the national majority has chosen to ignore the problems it creates for those who cannot. In the automotive era, there are fewer and fewer desired destinations that one can reach by walking or conventional transit. Declining patronage, moreover, has led to the absolute decline of transit, further disadvantaging those still dependent upon it. I do not believe that we can recreate the compact city or do a very great deal to revive conventional transit. But it seems to me that we do have an obligation to those unable to get around by car.[2] The answer in various situations may be dial-a-bus, subsidized taxi fares, or even subsidized car ownership. But it seems only fair that highway users should bear part of the cost.

There is no question but that at present the immense disparity between highway and transit funding has a distorting effect on state and local decision-making. As is frequently remarked, given a transportation "problem", state and local officials typically feel that the choice is between a highway "solution" at virtually no cost to state and local taxpayers (actually a large profit, if one considers the multiplier effects of the federal spending share) or a transit "solution" almost entirely at state and local expense. Again, this is not to deny that the bulk of urban transportation investment should continue to go into highways, but it is to explain why the current preponderance is even greater than it ought to be, and greater than it would be if the federal aid structure were less biased and rigid.

The problem of highway-transit coordination, as far as I can see, is not essentially, or even significantly, one of squabbling bureaucrats. Where mass transit funds are available, highway, transit, and land-use planners tend to relate rather well. Rights-of-way are shared, crossovers built, and stations, parking lots, and interchanges integrated. The key obstacle to coordination in practice is the lack, frequently, of anything for the highway planners to coordinate with.

One method of dealing with the disparity would be simply to increase the level of mass transit funding. A reasonable goal if this route were chosen would be a program level 35 to 40 percent of the level of urban highway aid for a "catch-up" decade, 20 to 25 percent thereafter.

I do not see the President recommending or Congress voting such appropriations from the general fund, however. Nor do I believe that the current overall level of urban transportation aid (highway and transit combined) is unduly low. The problem is allocational inflexibility, not resource inadequacy.

A first step toward remedying this situation would be to secure authorization for the Secretary of Transportation to approve state applications to use part of their highway

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[1] Surprisingly, official figures on the modal split of trips for other than commutation purposes have never been published. About three-quarters of all person trips fall into this "residual" category. I have elsewhere estimated, on the basis of a sampling of recent transportation studies, that the transit share of metropolitan non-commutation trips is 7 to 10 percent (3).

[2] This group, it should be noted, is quite large indeed. In 1964, 12.9 million U.S. households (23 percent) did not own a car. Roughly half of these were in the central cities of SMSA's, where they constituted 35 percent of all households. Of the 9.9 million households with incomes under $3,000, 46 percent had no car. Of the 5.5 million households headed by persons over the age of 65, 48 percent had no car. The transit interest is a minority, then, but a larger minority than, say, Negroes or farmers. And in urban sections built up prior to World War II, it is a very large minority indeed.

aid apportionments for transit purposes. The aim of broadening the Secretary's discretion would be to enable local needs and political preferences to play a greater role in determining the relative emphasis placed in each SMSA on transit as opposed to highway investment. Most SMSA's would have no desire to divert resources from highway-building to transit, but those that did would be encouraged to develop their ideas for submission as a formal proposal—first to state officials, then to the Department of Transportation. An application to the federal department would have to emanate from an appropriate state agency (where one existed, the state department of transportation). It would require endorsement by the representative metropolitan council designated by the Bureau of the Budget for Section 204 review.[3] Such a procedure would ensure that diversion occurred only where the top responsible state and local decision-makers were agreed as to its desirability.

The very term "diversion" is a hot potato, of course, but I would argue that it is also a red herring. The central point to keep in mind is that the whole system of highway finance is a political construct. Though the system is self-supporting overall, federal revenues are not distributed to the states proportionately to collections, nor have the states ever distributed them so to local units. It is also worth recalling that the level of national investment in highways, and of user charges, has been set by political decision rather than consumer choice in the market place. The Clay Committee, which recommended the Interstate program to President Eisenhower, judged that only 8,500 of the 41,000 highway miles proposed could possibly pay for themselves in tolls. Five thousand of these miles had already been built or were under construction by the states. The Highway Trust Fund has not reimbursed the states involved for their initiative. Thus, the real Interstate program involved 36,000 miles (the Highway Act of 1968 added 1,500 more, for a total of 37,500), less than 10 percent of which could have been financed out of the "farebox".

Moreover, decisions as to what are proper charges against the system of highway financing are necessarily political. Over the years, the definition of such charges has progressively broadened, particularly in connection with (a) compensating individuals and businesses dislocated by highway construction; (b) selecting routes that conform with land-use planning objectives; and (c) designing highways so as to please aesthetically, and so as to minimize their blighting effect on adjacent land uses. Nor would any review of the ways in which highway user payments are being directed by public policy to purposes other than simple "traffic service" be complete if it ignored the trend toward requiring motor-vehicle owners to purchase liability insurance, safety equipment, specified maintenance services, and pollution control devices, whether they wish to or not.

The drift of history, then, is already very strongly toward placing highway policy within a broad urban planning framework. Perhaps it is not an unthinkable projection to imagine Congress approving a plan for combining highways and transit within a single system of urban transportation finance. The decisive argument against the expenditure of highway user revenues on transit has always been political: automotive and highway interests would not stand for it.[4] If their attitudes are different, however, or their

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[3] I.e., Section 204 of the Demonstration Cities and Metropolitan Development Act of 1966 (PL 89-754). It provides for area-wide review—by a single general-purpose planning agency—of nearly all applications for federal public works aid by jurisdictions that lie within metropolitan areas. The area-wide planning agency must, wherever possible, be part of a general-purpose metropolitan government or regional council of elected officials. Most of the designated review agencies are county governments (in single-county metropolitan areas), state governments (predominantly on behalf of small SMSA's), and councils of elected officials (particularly in the large multi-county SMSA's). Parenthetically, I would contend that all state applications for aid to projects (highway included) within SMSA's should also be subject to Section 204 review.

[4] There is also a "moral" argument, but it hardly stands up under close scrutiny. What is the moral difference between one highway user subsidizing another and one transportation system user subsidizing another? Small-town and rural highway users have been subsidized by their urban brethren on quite a handsome scale for the past half-century. These subsidies have been justified in terms of the poverty and special transportation needs of rural people. The arguments have been extraordinarily similar to those made in support of transit subsidies. What has differed has been the organized power of the intended beneficiaries.

relative power is less, in half a dozen or several dozen metropolitan areas, there would not seem to be any national interest in preventing diversion. Quite the contrary.

With this in mind, I hope that eventually we shall witness a transformation (at least with respect to intra-urban travel) of the Highway Trust Fund into a combined Highway-Transit Trust Fund. This would permit the system of cross-subsidies that now operates within the highway program to operate within a broader sphere. (To have any chance of being salable, of course, this policy would have to require that a portion of all transit fares on non-highway modes be paid into the Highway-Transit Trust Fund. Alternatively, non-highway transit modes might be excluded from support out of Fund revenues. I would consider this regrettable but, as noted above, less than crippling.) This is, quite obviously, not a reform for tomorrow, but it does lay bare the destination toward which I think we should be moving.

INCREASED FLEXIBILITY IN THE TYPES OF HIGHWAY INVESTMENT PERMITTED IN THE FEDERAL AID HIGHWAY PROGRAM

This and the following section are basically extensions of the previous one. The premise is that, particularly in built-up areas, where land for new highway construction is extremely expensive (in both dollar and social terms), there is a critical need for improved "discipline" in the use of society's existing highway investment. It is, further, that traffic flow should be conceived in terms of people rather than vehicles—a proposition whose practical implication is that multi-person vehicles should be given priority whenever it is possible to discriminate in a congested traffic stream.

These ideas are now widely accepted by thoughtful highway engineers, but they merit vastly greater emphasis in practice.

That there is already movement in the directions indicated is suggested by the history of the federal TOPICS program (Traffic Operations Program to Increase Capacity and Safety), inaugurated on a pilot basis in February 1967. It provides that, in urban areas with more than 5,000 population, federal highway funds can be spent on traffic control as well as construction projects. Previously, traffic control investments could be included as part of the overall design of construction projects (so long as they constituted only a small fraction of total project cost), but they could not be financed separately. Even streets outside the federal aid system are eligible for TOPICS aid.

Among the types of improvements that have been specified as eligible for TOPICS support are development of separate transit lanes and signals; provision of shelters at transit stops; installation of traffic surveillance and control systems to make traffic signals responsive to traffic conditions and, inter alia, to provide separate bus lane controls; and development of truck loading and unloading facilities where this will improve traffic management.

The Highway Act of 1968 gave official recognition to this program for the first time, and allocated $200 million a year for two years to it. Another $50 million a year were reserved for fringe parking facilities planned in conjunction with transit investments. These provisions went through Congress without difficulty in spite of expectations on the part of some informed observers that they would arouse a furor.

These programs are still quite limited in the overall context of urban highway aid. Some believe that they must remain so. I believe that they are susceptible of very substantial extension, particularly in our older cities. To fulfill their potential, however, they ought to include the following:

1. Major research and demonstration efforts aimed at upgrading traffic control technology, particularly with an eye toward systems that can give priority to multi-person vehicles;
2. Bus as well as truck terminals;
3. The communications and dispatching systems required to make demand-actuated road transit (otherwise known as dial-a-bus) a reality;
4. Operating expenditures for traffic control personnel (a traffic cop can often do more to alleviate congestion than a major fixed facility whose annual interest and amortization cost would pay his salary several times over); and
5. Research and demonstration work on street use pricing.

The last of these is both so controversial and so vitally important that I shall devote the next section entirely to it. By way of concluding this one, let me say that I believe the TOPICS program should eventually become redundant. Funds allotted for urban highways should be available for construction, reconstruction, and TOPICS-type projects without statutory restriction.

STREET USE PRICING

There is growing recognition that in and around urban core areas, no feasible amount of highway investment can decongest peak-hour traffic. Moreover, the subsidization of each person-trip by automobile in such areas tends to be extremely great. The justification for street use pricing in such a circumstance is twofold: (a) to secure efficient use of a major societal investment, and (b) to make rapid movement possible for rich and poor alike. As William Vickrey has noted, "Sometimes a facility becomes worthless precisely because it is free....More generally, wherever congestion is likely to occur in the absence of pricing, a facility will be worthless as a free facility than if subjected to an appropriate level of toll." In effect, street use "fares" would constitute a surcharge on regular highway user tax payments, levied selectively in accord with the extraordinary cost of providing service at particular times and places, and the impossibility of providing good service to anyone at such times and places in the absence of restrictions upon demand.

The view is frequently put forth that street use pricing would discriminate against the poor. This is sheer poppycock. Everyone would benefit from the decongestion, but the main beneficiaries would be those currently dependent on transit. Their travel times would be greatly reduced. There would be no reason for their fares to rise, since it would make no sense to charge transit vehicles for congested area street use. Even if the charges were levied against transit vehicles, increased transit patronage would probably permit holding the fare line and increasing the frequency of service. Those sufficiently affluent to continue driving would also receive benefits, but they would have to pay for them. Their payments might be placed in a special fund reserved for the further improvement of circulation within the street use toll zones.

Street use pricing would probably make all of the rail transit systems now under consideration appear ludicrous. It has been pointed out that one year's interest charge on the proposed District of Columbia subway system could buy more buses than the number of transit cars that the system will operate. If rapid bus movement over the District of Columbia streets were possible, this would be an overwhelming argument against the subway system. With street use pricing (or some other system of rationing access to central area streets, at least during peak hours), rapid bus movement would be possible. Thus, the cost of the ideological aversion to pricing can be extremely high.

It is particularly hard to understand in view of the following:

1. Transit, which the poor do use, is not free;
2. No one has ever argued that automobiles should be free;
3. The trust fund method of financing is generally defended by highway program supporters as being in accord with the American market system, in which as many goods and services as possible are paid for by their users; and
4. Highway cost-benefit studies are regularly used to justify highway proposals on market grounds.

I do have some hypotheses about the origins of the anti-pricing ideology, but they need not detain us here. What is vital is that we move beyond it, not that we explain its roots in the issues and technologies of an earlier period.

Given the strength of political resistance to street use pricing and the need for substantial development work before it becomes a cost-effective option in numerous situations, I am proposing for the moment only that priority be given to research and demonstration efforts. The development of improved technologies for levying street use tolls without impeding traffic flow, and of a body of literature on street use pricing demonstrations, might gradually affect public attitudes.

TEAM PLANNING, MULTIPLE PURPOSE DEVELOPMENT, GREATER CITIZEN PARTICIPATION, AND MORE GENEROUS COMPENSATION

Having gone on at such length in the previous sections, I shall endeavor to be very brief here. In fact, I shall say nothing further at all about team planning and multiple-purpose development except to make explicit that I recognize they cost money and that outside the most densely settled areas the plausible supplementary purposes to "traffic service" do not involve exploitation of air rights. What they do involve is a wide variety of amenity values, ranging from pollution and noise abatement to beautification and the provision of usable open space. Many highway officials are sympathetic to these values, but their main professional mission (quite properly) is to improve traffic service. I cast no aspersions when I say that it makes no more sense to entrust transportation planning to one profession than national security planning.

With respect to citizen participation, the issue is one of serving conflicting priorities. No formula can suffice as a guide; the need is rather for sensitive and compassionate political judgment. First, there is the need for transportation facilities to serve an extremely mobile population, which desires that the transportation network be integrated at least on a metropolitan scale. On the other hand, a democracy must permit those whose lives are to be disrupted by a public works project the right to express their views in an open forum with all the facts before them. As noted previously, moreover, even in terms of "rational" planning it is essential to provide mechanisms for bringing a wide range of values to bear on functional decision processes. Under the best of circumstances, it is difficult to serve and preserve fragile human values with massive public works projects.

The problem is further compounded by the question of the proper federal role. Should the Department of Transportation stand in judgment when city and state officials are at odds, or when a city government has ruled against the objections of neighborhood groups within its constituency?

I have no firm view on where the ultimate proper balance may lie. I feel certain, however, that to date there has been insufficient opportunity for meaningful citizen involvement. In this spirit, I wish heartily to go on record as supporting the currently controversial "two-hearing" regulation, and to make clear that I view it as an intermediate step, by no means the end of the road. It does not remove authority from the hands of responsible officials. But it does force them to listen, and to give aggrieved citizens the satisfaction of responding with reasoned arguments to their views. Certainly, it is burdensome to sit and listen to garrulous protestors, and to have to go on public record with reasoned explanations of one's judgments, but that is what democracy is all about.

In the current activist climate, I would add, a high priority placed on demonstrating to citizens that their views are taken seriously can help rather than hinder program implementation. Attempts to bowl protestors over no longer work. They lead instead to political stalemate, occasionally to civil disorder. It is painful but vital to recognize that in our past preoccupation with the "costs" of democracy we have frequently taken the "benefits" of social peace and satisfaction for granted.

Turning to principles of compensation, the place to begin is by calling attention to the following landmark provisions of the 1968 Highway Act:

1. That resident home owners shall be paid up to $5,000 above fair market value where this is necessary to enable them to purchase fully comparable replacement property;
2. That renters shall be paid up to $1,500 where necessary to achieve the same objective (the payment may be used to subsidize rent for up to two years, or as part of a home purchase down payment);
3. That property owners shall be reimbursed for all expenses incidental to the sale (e.g., transfer taxes, penalty costs for mortgage prepayment);
4. That individuals and businesses displaced by a highway project may elect to receive actual reasonable moving expenses (no arbitrary limit);

5. That displaced businesses (unless they are members of chains) may be paid up to $5,000 for loss of neighborhood patronage and good will;
6. That each state shall provide relocation advisory assistance to those displaced; and
7. That all payments shall be made promptly, even (where necessary to avert hardship) in advance.

These are certainly the most important kinds of requirements that were needed, and that I would have called for a year ago. If they are vigorously and evenly enforced throughout the nation, most of the steam should depart the relocation issue.

At the same time, I should like to make two further suggestions. First, I would argue that a government-wide mechanism should be developed for paying compensatory damages to households and business proprietors dislocated by federally aided public works projects—of any kind, not just highways—more than once in, say, 20 years. The sum paid should be enough to mollify low-income people for the inconvenience to which they have been put in the interest of progress (as defined by the larger society). An appropriate scale of payments might be something like the following: $500 for the first household member, $250 for the second, $100 for each additional. Business proprietors might be paid a flat $2,500. These payments would be over and above those required to secure comparable quarters in other locations for the individuals concerned. Needless to say, eligibility in each case would depend on having occupied the premises prior to announcement that they were slated for demolition. (On the other side, public agencies should be prepared to acquire property within a year after any such announcement.)

Second, I would urge a similar provision to discourage the taking of historic sites and public open space. The 1968 Highway Act laudably forbids the taking of such land unless (a) "there is no feasible and prudent alternative" and (b) all possible care is taken to minimize harm to it. The language is necessarily vague, and it does not specify principles of compensation for use where the conditions are met. I would add, consequently, that when public open space is taken, the price should be the cost of its replacement in a comparable setting. If inner city parkland is taken, inner city parkland should be created. When historic sites are taken, I would urge that the price be their development value, assuming the most permissive possible zoning. The excess of the price paid over market value should be placed in special state or local funds reserved for the acquisition of other historic sites and/or public open space.

Before concluding this section, I should like to call attention to the recent Century Freeway experience in the Watts district of Los Angeles. It constitutes a fine illustration of the directions in which I think we should be moving with respect both to citizen participation and to principles of compensation.

The community role in developing both the corridor alignment and highway design was extremely active. The state Division of Highways negotiated seriously with community leaders (continuously, not merely at public hearings), and developed technical analyses of their suggestions. Fortunately, the community, in which a great deal of organizing had occurred subsequent to the 1965 riot, was relatively well-prepared to exploit the opportunity. When it came to the final choice between two plausible corridor alignment proposals, the California Highway Commission chose the one favored by the community over that preferred by the Highway Division staff, thereby incurring substantial additional expense. Agreements were also reached regarding the roles of black contractors and workers in the development process. With respect to these matters, the citizen participation and "compensation" issues were clearly inseparable.

In addition, the Highway Commission (fully supported, let it be noted, by Governor Reagan) stipulated that no resident would be left worse off as a result of the project either financially or with respect to the quality of his housing. To fulfill this promise, it was agreed that highway money would be spent to develop replacement housing on scattered sites. Homeowners were to be left in the same equity and monthly payment positions as before, renters with the same rents.

I do not contend that such elaborate arrangements are appropriate in every case. But where those to be displaced are poor, and particularly where they are also members

of minority groups that suffer housing and job discrimination, the case for applying the Century Freeway precedents should be considered very seriously indeed.

If time and space had permitted, there are a number of other topics that I would have very much liked to discuss, mainly having to do with citizen participation. These include (a) the use of polling and other "outreach" techniques to solicit citizen views during the network and corridor planning stages; (b) the allocation of resources to support advocacy planning on behalf of substantial groups with an interest in generating alternatives to highway department proposals; (c) the use of advisory panels of community leaders, advocate planners, and others with views quite different from those prevailing in the halls of officialdom to interact with the highway department staff on a regular basis throughout the planning process; and (d) the requirement of special procedures or majorities (e.g., in Section 204 review, which I have previously argued should be applied to highway projects) to override localities that object to proposed highway projects within their borders.

In concluding, let us return to the theme with which we began. In the nation's more densely settled cities and suburbs, the highway program is in trouble. Fairness, efficiency, and prudence, I have contended, all point toward accommodating rather than heaping scorn upon the critics. I have identified and reviewed the case for those few program adaptations that strike me as deserving of highest priority. Doubtless others, working through the same exercise, will arrive at different judgments. This does not disturb me. What is vital is that large numbers of those with policy responsibility begin to take fresh looks at their own received dogmas, at the arguments of their critics, and at unconventional ideas just visible over the horizon of feasibility. If I have stimulated even a few to undertake or intensify this effort, my central purpose is achieved.

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The Urban Planner Looks at Values

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Some of you may remember this excerpt from a current fable: "When the urbanites saw the sparkling new towns and the beauty of the restored cities, they could hardly believe their eyes. Now they saw it was possible to be urbanized and civilized as well as motorized and mechanized. For they had learned four basic principles for solving the problems of urbanization:

1. The principal problem of cities is not how to move, but how to live.
2. Improving the conditions of living can do more than anything else to reduce the need for moving.
3. But providing transportation is not just a matter of getting things moved. It is also a major means of improving the urban environment.
4. Looked at in this way, transportation has ceased to be a problem because technology and systems techniques have made it a solution."

Wilfred Owen (1) in his fable, "How the Cities Solved Their Transportation Problems," identified for us the principal value—how to live.

How do we understand or accept that value in transportation planning?

PERSPECTIVE

In September of 1957, a national symposium was sponsored by the Connecticut General Life Insurance Company in Hartford, at its new suburban headquarters. The conference theme was "The New Highways: A Challenge to the Metropolitan Region—How can we increase the efficiency and livability of our cities through the national highway program?"

The array of speakers and participants for that program was impressive. One speaker, in commenting on the unprecedented anticipated national highway program, remarked that he had a real fear that this highway program could do as much damage as it could good. He noted that a participant from the federal establishment implied that there was not much time left for planning. He observed that there had well better be time left for planning; there must be time found for planning; that maybe we should not initiate the program until we knew where we were going—until we had more fully and critically identified the goals we were seeking to achieve, the values we expected to gain or stabilize.

John T. Howard, Head of the Department of City and Regional Planning at M.I.T., remarked a couple of months later at the annual meeting of the National Municipal League, in November 1957, "...the design of the interregional highway system was an act of national planning of great influence on future national patterns of urban growth. As far as I know, it was a completely unconscious act."

I remember that Connecticut General Conference, which I was attending with one of the most dynamic public officials I have known and worked with, Mayor Ben West of Nashville, among other reasons because midway in the conference and about 3:00 a.m., we were scrambling around getting him air transportation back to Nashville because an elementary school had been dynamited. (This was during the hectic days following the Supreme Court's school desegregation decision.)

The speaker at that conference who suggested that the Interstate Highway System, as we have come to know it, wait until we knew where we were going—well, his suggestion "bombed out". Dare we ask—after a dozen years of planning, programming, and effort—whether we have "bombed out"?

DIALOGUE ON VALUES

We now talk freely, without embarrassment, about urban highways as instruments of urban policy as well as arteries of transportation.

"Urban Highways in Perspective" (2) recalls for us the 1958 Sagamore Conference, which "sought closer coordination of highway and community development"; the 1962 Hershey Conference, which, in recognition of the impact of urban highways upon people, land use, economic activity, beauty and amenities, recommended that "freeway planning be integrated with city planning and that teamwork among agencies and professionals begin at the earliest stages of design"; and the 1965 Williamsburg Conference, which had as its purpose the identification of "values, goals and objectives of city development and the determination of how transportation could enhance them."

The literature since 1965 includes "Techniques for Determining Community Values," a paper presented by Alan M. Voorhees at the 1965 Annual Meeting of the Highway Research Board (3). He recognized that techniques for determining community values, particularly at the location and design level, were just beginning to emerge. In summarizing, he noted: "The evaluation of community values is a very complicated issue. It is quite clear that it is fundamental to the whole planning process. It is the one factor that makes planning quite different from many other professional tasks. Until better techniques are developed to measure these values and to resolve them, it will be difficult to develop plans which will have public acceptance and understanding. Although this task is a difficult one, it is nevertheless essential if we are to prepare plans which may be successfully implemented in a democratic society."

Voorhees' review of focus groups, rating panels, and attitude surveys as methods for establishing overall community values are augmented by several articles on "Team Concepts for Urban Highways and Urban Design" published by the Highway Research Board (4). In that publication, Lowell K. Bridwell, then Federal Highway Administrator, recognized the as-yet unbridged gap between cost-effectiveness and value-effectiveness in the public dissent and opposition conveyed with such phrase imagery as "Chinese wall," "concrete monster," "big ditch," and "biological barrier" (because it would disturb the ecological balance of the area it crossed). Rather than arguing the truth or fiction of these complaints, he suggests that they be accepted for what they really are—expressions of relative degrees of dissatisfaction, expressions of challenge to do better, and expressions of public belief that the development of highway transportation and its facilities must be much more closely related to a whole range of other public and private policies being developed simultaneously.

"Highway planning," he argues, "notwithstanding all of its highly diverse and complicated engineering detail, is not and cannot be a completely quantifiable process in which all elements can be measured and tested, and assigned numbers representing cost, capacity, and other criteria going into the decision process. To do that we almost certainly would be ignoring, or at least not giving adequate weight and value to, the unqualifiable elements that are equally important. How do you measure the social viability of a neighborhood? How do you assign a number value to the social maturity and stability of a residential area? How do you test and assign a cost to the convenience of children going to an established school district, or parishioners to their church?"

An advocate of the multi-discipline team to plan and conceptually design the city's limited access highway system, Mr. Bridwell indicated that "there has been some grumbling, of course, from those who believe that the system has been needlessly and expensively delayed by the planning process. One cannot deny there have been delays. But do not overlook the alternatives to this kind of delay—alternatives that include a poorly designed and disruptive highway through the city; a loss of irreplaceable community values; a missed opportunity to substantially improve the quality of living in the city; possibly, placards and court suits; possibly, no highway at all."

"Transportation and Conservation," a total environment approach, is discussed by Herbert S. Levinson in the January 1969 Traffic Quarterly (5). In recognizing that the consideration of community values in transportation planning is increasing, particularly in view of present concerns over economic and social problems in our central urban cores, he notes, "the difficulties of defining and systematically quantifying social,

community, and environmental values have often led to their exclusion from conventional benefit-cost analysis and related transportation decision-making. There is still no overall framework for evaluating the trade-offs between a minute of travel time saved and a tree lost, or for answering the simple yet difficult question: how does the value of a minute of time saved compare with the value of a home displaced, or a family dislocated?"

In the 830 square-mile Springfield, Massachusetts, Transportation Study Area, he reports that transportation and land-use planning were coordinated through all study phases. Special studies were made of community attitudes and profiles, neighborhood identifications, environmental visual qualities, and historic buildings and landmarks. A generalized historic preservation plan was prepared and used as a guide in locating new highways. The comprehensive highway plan was further complemented with regional park and open-space planning.

In the same issue of Traffic Quarterly, Martin Wachs and Joseph L. Schofer (6) hope that the current emphasis on the systems approach and PPB in the planning of urban transportation networks will lead to more effective investment and operations decisions.

We come to the point of judging whether the glass is half full or half empty in applying transportation as a positive device for elevating the quality of the urban environment. Are we losing our chance to reconstruct our cities partly because of a narrow unimaginative view of the potentialities of planning systems of movement? It is something of an obvious truth that so long as our chief justification for having transportation is the measurement of benefits for those who will directly use it; so long as we play systems to be internally efficient and operable, yet disregard other urban systems and values; so long as our local leadership, both technical and political, chooses to avoid the responsibilities for establishing the community's values and goals—then we will continue to dissect the physical and human community, to create dissension and hostility, and to waste public resources (7).

PARTICIPATIVE DEMOCRACY

Additions to the literature on community values are becoming more frequent and range from highly subjective expressions to more sophisticated methodological excursions. And we could talk about the literature with great interest, maybe with considerable intellectual titillation, but relevance?

A great deal could be gained by aggressively applying the principles of planning and design enunciated in "The Freeway in the City" (8; see also Appendix), but I suspect we might miss the whole mood of our times, which has made the already elusive issue of community values even more volatile.

Bayard Rustin put it this way a few weeks ago when he said: "Every Negro could be provided with a good job, good housing and an education and we would still have a revolt, because Negroes want to share in the decision-making."

The "in" thing is participative democracy.

Ambrose Bierce, author of "The Devil's Dictionary," defined participatory democracy as a practice whereby a community (usually black Northern) controls its own affairs in politics, economics, and education without interference from the government; to be distinguished from "state's rights"—a practice whereby a community (usually white Southern) controls its own affairs in politics, economics, and education without interference from the government.

There is no question that our status quo has been knocked head over heels by the revolutions in science and technology, in communication and the processing of information, in industry, agriculture, and education, in demography and bio-medical affairs.

We are creating new problems as fast as we think we are solving old ones, and are beginning to get a little more than nervous that if a successful society is a good problem-solving mechanism, ours is not so today.

In his search for continuous renewal as the best route to orderly social change, John W. Gardner (9) seeks new solutions that preserve old values. In doing so, he characterizes the essential qualities of a society capable of fostering creative individuals, capable of renewing itself. These include:

Pluralism—the creative society will be characterized by variety, alternatives, choices, and multiple foci of power and initiative.

Individual Potential—the society capable of continuous renewal will be one that develops to the fullest its human resources, that removes obstacles to individual fulfillment, that emphasizes education, life-long learning, and self-discovery.

Dissent—the creative society must provide for dissent, for the emergence of alternatives to official doctrine or widely accepted assumptions; it must provide for honest appraisal of the disparity between existing conditions and widely expressed ideals.

Participation—in order to have a vital society we must have as high a degree of participation by the individual as we can manage. Gardner notes in this respect that:

> The urge to participate actively in the shaping of one's social institutions is not a powerful human motive. On the contrary, it appears to be notably weak and undependable; all the more reason we must fan that uncertain flame.
>
> This is a moment when men, here and around the world, have in some measure withdrawn faith in their institutions. They are questioning, reexamining. At such a time, there can be nothing more healthy, nothing more healing, than for men to participate directly in reshaping the institutions that no longer enjoy their confidence. It is the only way that confidence will be established. And there is today a healthy impulse toward such participation. People do want to have their say. They want to feel that they count, that they're "connected."

Values—a society capable of renewal must have deply rooted values. If it believes in nothing, there is no possibility that it can generate the high level of motivation that renewal demands. The values must not only be compatible with the process of renewal, they must be worthy of a great civilization:

> We are fortunate in that respect. Freedom, justice, equality of opportunity, the worth and diginity of the individual—these are values that are supremely compatible with social renewal. Our problem is not to find better values but to be faithful to those we profess.

WHY THE PROBLEM

Assuming that there may be fairly general agreement among us on the substance of my remarks to this point, why do we have problems in relating community values to transportation planning?

We do not want a proposed highway location to tear up a neighborhood. We do not want a transportation decision to rip the intricate fabric of a community. We do not want a transportation improvement to be a destroyer of man's environment.

We seem to be able to accept general principles but something gets lost in their specific—or particular—application.

Several months ago, the Southwestern Pennsylvania Regional Planning Commission conducted a one-day seminar on "issues in a region of contrasts." This was preparatory to its effort in formulating a region-wide (multi-county) plan. The document (10) prepared to facilitate discussion at that seminar stated:

> The construction of programmed freeways in this region will continue to disperse the population and create a new form of development oriented toward the high-speed highway. At the same time, unless policies are developed to arrest the trend of population decentralization, the older communities...will continue to decline.
>
> What is needed is a coordinated transportation development policy that seeks to establish the role that both highways and transit will play in the region's future. To formulate a policy that considers only automobiles and systems of transit hardware would be tragic. Transportation as a total system

> of highways and mass transit must not be narrowly conceived because of its potential to restructure and revitalize the development pattern of the region.

In a letter from Bill Froehlich, Southwestern Pennsylvania Regional Planning Commission's Executive Director, he reminded me of a couple of points brought out at the Policy Forum that he felt were relevant to a consideration of planning and community values. "Our surveys," he stated, "showed rather clearly that the disadvantaged, both racially and economically, are not being served well by urban transportation." (One might ask: Whose community and whose values were considered?)

"In the Pittsburgh metropolitan area these people are located in the valley communities, and much of the present plan for the future (both highways and rapid transit) appears to be oriented more toward those segments of the metropolitan area which can more readily afford better transportation. This is one of the policy questions toward which we must direct our attention. Also, our travel surveys showed that the low income groups are not using regional recreation facilities to the same extent as the higher income groups. Again, availability of transportation could be the problem. Either we should locate more recreation facilities nearer the low income groups, or we should provide better transportation facilities to recreation areas, or both."

In commenting on people, jobs and transportation, the Northeastern Illinois Planning Commission noted in the proceedings of its 1965 public hearings on alternative plans for northeastern Illinois:

> ...we have two issues on job locations. The first is whether we should continue the trend toward a wider spreading and scattering of jobs, or whether some attempt should be made to group jobs in large or small centers near major transportation arteries. The second issue is whether or not arrangements should be made to provide housing for workers near their jobs. The choices here really boil down to how much people care about a relatively easy trip to work, a wide range of job choices, and better public transportation. If people are concerned, are they concerned enough to do something about it? ... like job clustering and a broader range of housing opportunities in the suburbs? ... like modifying local zoning ordinances to permit this to happen? ... like a system of government subsidies to compensate the private bus operators and railroads for losses sustained in expanding their service?"

Arthur F. Loeben, Montgomery County Planning Director (eastern Pennsylvania), can wax eloquent on value identification and clashes noted as the King of Prussia area was impacted by the extension of the Pennsylvania Turnpike in 1950 and again in 1954 and the opening of the Schuylkill Expressway to downtown Philadelphia in 1957. He reminds me that the telescoping of change into a short period of time dramatizes the issues all the more.

As we reflect on the complexity and difficulty of making value judgments and gaining a consensus, the issue of time contributes an extra measure of sensitivity.

The I-40 segment of the Interstate Highway System in Nashville, Tennessee, is a colorful reference these days. The Saturday Evening Post featured it a few weeks before that magazine's demise. Over a ten-year period, presumed agreement by the community and its leadership changed as the community, its leadership, and their priorities changes.

During the time that I-40 initially was being located and agreed upon, Nashville and Davidson County were going through the process of consolidating their respective city and county governments into a single metropolitan government. The emotional issue of the 1962 Charter, which was approved in public referendum, was whether the members of the school board should be elected or appointed. The tensions associated with race and poverty that are so apparent today were treated in statesmanlike fashion by a Negro leadership who prevailed in the judgment that a vital, thriving community would be good for all people—that power, white power or black power, over a community that was going noplace was empty and a lie.

Metropolitan government has been a great thing for Nashville. Notwithstanding that evidence and with an awareness of the mood of our time—and six years in today's chronology is a long time—and given the feelings about I-40, I wonder what would happen if metropolitan government were being sought there in 1969.

UNDERSTANDING

Leland Hazard, Chairman of the Governor's Committee for Transportation in Pennsylvania, addressed himself to the question of values in a statement summarizing the work of that Committee and Pennsylvania's transportation planning and development position.

> What values—and why—do people put on the fruits of science, artistry, invention, technology, spirituality, aesthetics? There is no trouble about the cost side. It is easy always to determine what a new facility or element or factor in man's well-being will cost. [We are] good about figuring costs. How to figure the benefit side—the benefits which are to be balanced against the costs—this is more difficult. [We are] not so good about that. The poets, philosophers, artists, anthropologists, sociologists, psychologists and theologians are very good about words; but they are not as good about figures. Therefore, and for the most part, we have always looked only at the costs of developing the facilities and amenities by which men in society live. These costs are always stated in numbers, but we have great difficulty in developing numbers on the benefits side. We have been happy in retrospect when we put in, as the Chinese proverb has it, a stone and took out a jade.

When we talk about man and community values, we are talking about people, individuals, and how they relate to one another and the totality of their existence. We are talking about the conditions and circumstances that affect them in our highly complicated society, and how far removed they feel from influencing those considerations that can intimately impact their lives. It is small wonder that we find resentment and resistance. At issue is an individualism and its expression honored as a great American tradition.

Today, the issues that are real are the social issues; the values that are of first priority are the social values. If we do not recognize that fact, our deliberations can have been very much like the planning conference I attended about a month ago that sought to look ahead 50 years. The future is a projection of the past, we were told in elaborate prose; and they could have said the same thing 20 years ago.

We are in the eternal business of building a nation—a people. Our heritage is not the pyramid or the sphinx. It is the spirit of a people—a people who can make a city work because, with all of the stresses and strains, we have faith in each other, we have a use for each other, we have a common trust and a commitment to try to understand and share man's desire for a decent home, in a decent neighborhood, in a decent city.

We need to respond with a candor equal to the President's, when he was asked at a press conference: "Mr. President, do you agree with those who say you and your administration have a serious problem with distrust among the blacks, and whether you agree that it is one of your more serious problems, or not?...what are you doing to deal with what some consider to be this distrust among the blacks?"

The President said:

> I am concerned about this problem; and...those who have raised the question are not simply those who are political opponents.
>
> My task force on education pointed up that I was not considered—I think the words they used—a friend by many of our black citizens in America.
>
> I can only say that by my actions as President I hope to rectify that. I hope that by what we do in terms of dealing with the problems of all Americans it will be made clear that the President of the United States, as an elected official, has no state constituency.

> He has no congressional constituency. He does not represent any special group. He represents all the people....
>
> Putting it another way,...the President is the counsel for the people of this country and I hope I can gain the respect and, I hope, eventually the friendship of black citizens and other Americans.

Those of us concerned with transportation planning and development must strive to gain the renewed trust of all the people.

Those of us concerned with transportation planning and development must project an earnest expression for understanding individual uneasiness in the location and design of facilities and make this effort fully operational.

Those of us concerned with transportation planning and development must gain the involvement of people, the community, the region in the decisions to be made.

Those of us concerned with transportation planning and development must achieve an awareness and appreciation of community values that matches—and changes—the present feeling of apprehension when issues are joined between local and superior jurisdictions.

This is the truth of the task we face if our work is to have purpose and be useful.

How do we do this? Well, we may make a small beginning, in terms of some of the discussions here:

1. As Paul Ylvisaker says, by bleeding a little more for the Mattie Humphreys; Milano and Schloss have a few options left she does not have.
2. By using the Watts-Century Freeway as a prototype.
3. By reaching out for the kind of participation and involvement of people that Prof. Altshuler touched on.
4. By striving for the metropolitan awareness—the metropolitan morality—that has been referred to in bringing issues and people together.

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Appendix

THE FREEWAY IN THE CITY

A report to the Secretary, Department of Transportation, by the Urban Advisors to the Federal Highway Administrator, 1968, Washington, D.C.

Major Recommendations

1. Expand the application of the techniques of systems analysis and operations research as the most rational approach to the problems of planning, locating, and designing urban freeways.
2. Adopt the systems concept of an interdisciplinary team approach to urban freeway planning on every level—Federal, state, regional, and local.
3. Appoint an independent review board composed of qualified professionals to serve the Federal Highway Administrator, the Director of Public Roads, the state highway engineer, or the city public works chief in an advisory capacity.
4. Encourage and aid formal education in urban transportation and highway planning and design.
5. Establish a system of regional urban design institutes.
6. Encourage the formulation with each state of a total environmental planning commission.
7. Coordinate freeway considerations with the comprehensive planning of every affected community, city, and region.
8. Promote the integration of freeways with all other elements of the urban transportation system.
9. Stimulate more research on better ways of moving people and goods.
10. Investigate the possibilities of giving highway departments the authority to condemn and purchase lands adjacent to a proposed freeway or interchange.
11. Provide a more equitable basis of compensation for lands acquired for highway purposes.
12. Stimulate increased emphasis on the exploration and use of new modes of urban transit.
13. Encourage the multiple utilization of urban freeway rights-of-way.
14. Encourage state highway departments and local agencies to purchase and develop freeway-recreation corridors jointly.
15. Develop and promote the passage by states and the Federal government of advanced highway-related enabling legislation.
16. Encourage a high level of visual quality in every proposed freeway.

Community Values, Social Measurement, and Transportation Policy

MANCUR OLSON, JR., U. S. Department of Health, Education and Welfare

What questions can we ask about a community's values that would be especially pertinent to its transportation policy? Some questions seem to have a prima facie relevance: Do the citizens prefer auto, bus, or rail transport? Are they willing to disrupt a stable neighborhood to construct a new freeway? What are their attitudes about air pollution? Are they concerned about how long it takes them to commute to work? About the safety of their mode of transport?

But the answers to these questions, even if relevant, would not be very useful to the urban transportation planner. Often the answers that would be obtained are obvious beforehand: Other things being equal, the citizens of almost any community would prefer clean air to polluted air, safe and speedy transportation to that which is slow and dangerous. It is not immediately obvious whether the citizens of a community would say they preferred auto, bus, or rail for urban transport, or whether they would be for or against a new freeway through the inner city, but even here their answers would tell us very little. Whether they preferred auto, bus, or rail would surely depend on the service they thought each mode would provide for them, and on how much it would cost: the same person who would insist on using his car to commute in Orange County would probably take the subway if he lived and worked in Manhattan. Whether they would support construction of a new freeway through a stable neighborhood would often depend on whether they lived in the neighborhood or had to drive through it, or on the seriousness of the existing traffic problems and the number of persons who would have to be relocated.

One reason that answers to the foregoing questions would not be very interesting is that they would have to be fundamentally qualitative, whereas information the planner needs to have about community values is inherently quantitative. Although we know that, other things being equal, the normal healthy citizen prefers clean air to pollution, and speed and safety above slowness and danger, we usually do not know how important—how much he would be willing to give up to get—a given improvement in air quality or speed or safety of travel is to him. And as planners we have a need to know, for otherwise we cannot hope to know how much money, community stability, or whatever is worth giving up to get a given improvement along any of the dimensions we have discussed. The quantitative character of the answers the planners need to have also shows up when there is a choice among different modes of transportation. Surely the typical citizen is fundamentally interested in the relative speed, comfort, safety, convenience, and cost of alternative modes of transportation (i.e., in quantitative comparisons of their performance), rather than in the mode itself. It is no doubt true that some people love their automobiles, or use them partly as status symbols; but would automobiles be loved or used as status symbols in a society in which they were of no use?

Another reason why the answers to the foregoing questions would not be very interesting is that they would depend on the conditions with which each respondent happened to be confronted, and would therefore have no general applicability. Very small amounts of pollutants escape our attention and spare our health; sufficiently heavy levels will oppress our senses and shorten our lives. A faster commute will not matter much if it takes us 5 minutes to get to work, but it will matter a good deal if it takes an hour. The basic point is that the value an individual places on a given improvement, or the extent of his concern about any retrogression, will depend on where he stood along the relevant dimension. In general, an individual will place less value on additional units of a good or service if he already has a good deal of that good or service than if he has very little. (As Kenneth Boulding puts it in his paper in this volume, "We do not have a single 'value' for either [good] A or [good] B; what we always have is a value sys-

tem that consists of different values for A and B depending on how much we have of either of them.")

The upshot of all this is that it is, in general, impossible to get the quantitative information on values a transportation planner could use without first determining how much the individuals concerned already have of whatever objective is at issue.

We shall accordingly have to turn now to the problem of measuring the extent to which a community has been provided with the things it values.

SOCIAL INDICATORS

There is one area in which we have a reasonably satisfactory measure of how much we have of what we value. That is the area covered by the National Income and Product Accounts, from which we obtain the statistics on the National Income and similar measures of the output of the economy. The figures on the National Income are probably the most impressive and elaborate type of socioeconomic measure that we have. Although over any given year the output of thousands of different types of goods goes up, and the output of other types of goods goes down, the National Income provides a meaningful aggregate measure of how much the market economy has grown or declined on balance. Although it comprehends a vast variety of phenomena, it is sensitive enough to reveal even the mild recession or the slow advance.

Most importantly, the National Income statistics also provide what the economist tends to call a measure of "welfare", that is, an indication of how "well off" we are. Thus the rate of growth of the National Income is often relevantly cited in assessments of how well or badly a given administration, country, or economic system has been doing.

Yet, for all their virtues, the National Income statistics do not tell us many things we need to know. They leave out most of the things that make life worth living. They leave out the learning of our children, the quality of our culture, the advance of science, the compatibility of our families, the liberties and democratic processes we cherish. They neglect the pollution of the environment, the depradations of crime, and the toll of illness.

They even misconstrue or neglect many values that can readily be measured in monetary terms. When the criminal buys a gun, or the honest citizen buys a lock, the National Income rises. When a new highway is constructed near a residential area, the expenditures on that highway add to the National Income; but so do the expenditures on air conditioning of those nearby residents who can no longer bear to keep their windows open because of the noise.

The most notable limitation of the National Income statistics is that they do not properly measure those "external" costs and benefits not fully reflected in market prices. They neglect or misstate the costs to society of those actions, such as the generation of pollution, which do not show up in the expenses of the offending firm or individual. They similarly neglect or misstate much of the benefit to society of those undertakings, such as basic scientific research, which do not bring the sponsor's profits proportional to society's gain.

If some of our actions bring burdens or benefits to others, but these burdens or benefits are not reflected in the prices we pay or receive, then we have, as individuals, no incentive to take them into account. We have no incentive to curtail those activities that bring losses to others, but no cost to ourselves; and no incentive to undertake activities that bring a gain to society, but no reward in the marketplace. These activities must therefore normally be carried on by governments. The "external" costs and benefits that the National Income statistics leave out or misstate are thus of special importance for public policy.

The aspects of our welfare that the National Income leaves out are particularly important in cities. As population has grown and urbanization increased, a mainly new type of interdependence has emerged, which rarely existed in the rural environment. If a frontier farmer should leave his garbage in his yard, it would be nobody's business but his own. But if the urban resident does this, there is a problem for the whole neighborhood. The frontier community did not need to worry about pollution, but the modern

megalopolis does. Zoning laws are relatively unimportant in the country, very significant in the city. The general point is that in a rural society, there is only limited interdependence, apart from that which is automatically coordinated by the market system, but in a crowded city a man's actions directly affect the welfare of others in ways that do not show up in the National Income statistics.

If developments that escape measurement in the National Income statistics have a direct impact on our well-being, especially when we live in large cities, and are usually also a particular concern of public policy, there is a serious need for statistics on these developments. There is, in other words, a need for measures of how much people have of those things they want that they cannot get in the marketplace, and that accordingly are not properly measured in the National Income statistics. Such measures are, as we saw earlier, also required before we could hope to learn much that is interesting about community values.

Unfortunately, the statistics needed to complement the National Income and Product Accounts, and allow broad-gauged measurement of community values, rarely exist. In these areas of public or social concern, the only kind of statistical information that is generally available is that which relates to the expenditures and activities of governments. Why is there this imbalance in the supply of "social" information, which tells us what resources the government is using but not about the severity of the problems it deals with or what progress it is making in solving them?

This imbalance in the supply of information on public problems is owing in large part to the fact that the normal routines of government demand a considerable amount of information on how much a government spends for each purpose, on what types of resources it uses, and on the activities it undertakes, whereas there is no routine requirement for information on national problems or accomplishments. There are always accountants who ensure that government funds are not misappropriated, supply and personnel officers who keep track of the resources the government uses, and public relations experts who publicize each agency's activities. Governments thus produce information about their own activities as a by-product of everyday operations, but there is no such automatic provision of information about the society's problems, or whether we are making any progress in dealing with them.

Plainly, information about the activities or expenditures is not what we need to begin to measure community values. To begin to achieve that purpose we need information about the condition of our society; about how much children have learned, not about the time and money used for schooling; about health, not about the number of licensed doctors; about crime, not about the number of policemen; about pollution, not about the agencies that deal with it. It is true that increased expenditures on some social problem, or an increased number of teachers, doctors, or policemen, and the like, are often taken as measures of progress in solving social problems, but they are usually grossly misleading measures. We would surely be better off if we could manage to deal with a social problem with less cost—if we could get as much learning, health, and crime prevention with fewer teachers, doctors, or policemen. All these resources are scarce, and could also make a contribution if they were used for other purposes—in some cases more of a contribution than they make in the area where they are used as measures of progress.

The sort of statistics that the foregoing argument has attempted to show are badly needed, but usually lacking, and are defined as "social indicators". Social indicators are statistics of direct normative interest. In the language of the economist, they might be called measures of "welfare" or "illfare". The National Income statistics provide a prototypical social indicator, because they provide a measure of how much we have of the goods and services we seek through the marketplace.

My emphasis on the need for social indicators, both for better public policy and broader measurement of community values, is due in part to my experience with "Toward a Social Report," a preliminary study of the condition issued by the federal government in January 1969 (1). Since I had immediate responsibility for the preparation of this report, I could not but be impressed with the lack of information, beyond that contained in the National Income statistics, on how "well off" the American people were. "Toward a Social Report" exploited practically all of the social indicators that are now available

at the national level, yet in many cases had to rely on "proxy" measures, or simply point toward the sort of information that was needed.

At the level of the city or community, the lack of social indicators is even worse (and also, because sample size does not decrease with the size of the population, relatively harder to finance). Even so, there is a need for social reports on major cities and metropolitan areas. Such reports not only would encourage the collection of needed social indicators, but also would be a step toward policies that would better serve the community values. They would at the least provide visibility to metropolitan problems and permit more enlightened public discussions about how these problems might be solved. They could ultimately also allow better judgments about community values and more nearly optimal policies for satisfying them.

AGGREGATIVE INDEXES

If the point is accepted that we need measures of "welfare" and "illfare" in the "social" area that could complement the National Income statistics, it is natural to ask whether these newer social indicators could have some of the "aggregativeness" that helps to make the National Income statistics so impressive. As was indicated earlier, over any significant period of time, the output of some of the goods produced in a country increases while the output of other goods decreases. In a depression the output of glass jars for home preserves, or of contraceptives, may increase; during a period of rapid growth the consumption of cheaper goods may decline as people switch to substitutes of higher quality. Changing technologies and fashions also ensure that the tens of thousands of different types of goods produced in a modern economy do not show the same patterns of growth or decline. The extraordinary achievement of the National Income and Product Accounts is that they summarize this incredible diversity of developments into a single, meaningful number indicating how much an economy has grown or declined over a period.

The aggregation involved in the construction of the National Income and Product Accounts is so successful in part because relative prices are used to determine the relative weight or importance to be given to a unit of one kind of output as against a unit of a different type of output. If the number of automobiles produced has gone up by half a million since last year, while the output of potatoes has fallen by half a million bushels, we need to know the relative importance of these two developments before we can begin to make a judgment about the movement of the economy as a whole. It would obviously be arbitrary to determine the relative importance of these two developments by comparing the weight in pounds of an average automobile and a bushel of potatoes (though even an arbitrary approach like this might be better than no index of output at all). Thus the relative prices of automobiles and potatoes are used to weigh the relative importance of two such developments in the National Income and Product Accounts.

Relative prices at any given moment of time provide weights that are presumably meaningful in "welfare" or normative terms. This is because a consumer who rationally seeks to maximize the satisfaction he gets from his expenditures, in terms of his own tastes or values, will allocate his expenditures among alternative goods in such a way that he gets the same amount of satisfaction from the last dollar spent on each type of good. If he obtained more benefit from the last dollar spent on apples than the last dollar spent on oranges, he would obviously be better off if he spent more on apples and less on oranges.

The almost universal reliance on such aggregative measures of a society's income should not, however, obscure the dangers of failing to look behind the aggregates. Imagine these two cases: In one, the National Income remains constant over a year, and all of the industries have the same level of output over the year; in the other, the National Income also remains constant, but about half of the industries grow and the other half decline. Obviously, the first economy would be stagnant, whereas the second would be undergoing significant change, including presumably shifts of resources from some industries to others. We would not see the profound differences in these two hypothetical situations simply by looking at the aggregate figures for the National Income. We also have to disaggregate.

But disaggregation is not the enemy of aggregation—indeed, a consciously constructed aggregate is usually easier to break down into its components than most other statistics. A well-constructed aggregative statistic, like the National Income, can (in principle at least) be compared to a pyramid. At the base are the individual firms, sites of production, and individual income recipients. Just above are the industries and communities, and above them are the major sectors and regions. When the same goods are processed by several firms, double counting is avoided by counting only the "value added". At the top there is the National Income. Such a pyramid can usually exist only when there has been the consistent definition and procedure that aggregation requires, and this systematic approach probably facilitates disaggregation as well as aggregation.

The relevant point that emerges from an examination of the National Income and Product Accounts is that aggregation can be extraordinarily useful, and is compatible with the use of the same data in disaggregated form. The trouble is that the "weights" needed for aggregative indexes of "social" statistics are not available, except within particular and limited areas. It would be utopian even to strive for a Gross Social Product or National Socioeconomic Welfare figure that aggregated all relevant social and economic variables. We cannot assess every sparrow's fall, at least in any objective way. There would be no objective weights, equivalent to prices, that we could use to compare the importance of an improvement in health with a decrease in social mobility. We could in principle have a sample survey of the population, and ask the respondents how important they thought an additional unit of health was in comparison with a marginal unit of social mobility. But the relevant units would be difficult even to define, and the respondents would have no experience in dealing with them, so the results would probably be unreliable. Thus the goal of a grand and cosmic measure of all forms or success of welfare must be dismissed as impractical, for the present at any rate.

Within particular and limited areas, on the other hand, some modest degree of aggregation is now or soon will be possible. And even over a limited area, such aggregation can be extremely useful. The only puzzle is why this limited degree of aggregation was not attempted long ago. The possibilities for useful aggregation over a limited span can be illustrated with the following examples.

One aggregation index that is full of promise is an index of the population's health and life expectancy. When some diseases and disabilities are becoming more common, while others are becoming less common, and life expectancy is also changing, how do we come up with a single measure of the population's health? How do we weight the importance of the disease that is becoming more common with the disease that is becoming less common? Happily, a useful index can be obtained by calculating the "expectancy of healthy life", that is, the "life-expectancy-free-of-bed-disability". This weights each disease or source of disability in proportion to the number of days it keeps a person in bed. If there is either a reduction in bed-disability due to a reduction in disease, or an increase in life expectancy when bed-disability is unchanged, the index will increase, as it should. The actual values of this index for the United States are given in "Toward a Social Report" (1), and they show no clear improvement in the nation's health since 1958. Admittedly, this aggregative index is, like the National Income statistics, imperfect in a number of respects.[1] Withal, it offers a far better measure of our condition of health and life than we have had before.

Another area in which limited aggregation is possible is that of crime. Plainly, some crimes are regarded as more serious than others. Thus a true index of crime would not, like the total of "indexed" offenses listed in the Uniform Crime Reports of the FBI, weight all relevant offenses equally. If the murder rate went down, and the rate of

[1] It does not deal with the disability that does not force people to bed. Although it weights the serious disease more heavily than the lesser disease, since the serious disease more often results in death or in longer bed-disability than the minor disease, it makes no allowance for the difference in pain and discomfort per day among various diseases. Finally, it ranks death and permanent bed-disability equally, which may not be in accord with our values.

larceny went up by a like percentage, a mere total of offenses would tend to show an increase, since larceny is more common than murder. But a murder is more serious than a larceny, so the crime problem might in fact have become less serious. There is therefore a need to weight each type of crime by some measure of its seriousness.

These weights must be different when we focus on the degree of culpability or criminality than when we consider the harm done to victims. The weights for an index of culpability or criminality can be obtained in at least two ways. One way is by taking average length of prison sentences of each type of crime, as determined by statutes or judges, as a measure of the seriousness of the crime. Another way is by asking a sample of respondents to compare the seriousness of different offenses quantitatively. If a given offense is arbitrarily given a certain numerical value, they can provide a cardinal scale of seriousness by giving their estimate of the seriousness of other offenses in relation to the given offense. Several studies of attitudes on the relative seriousness of different crimes have been conducted, and they reveal a remarkable consensus about the relative severity of different types of crime among different classes and groups. The results of the best-known of these studies are highly correlated ($r^2 = 0.97$) with data on average prison sentence by type of offense.

When the focus is, by contrast, on the harm done to victims, the appropriate weights for thefts are immediately evident from the dollar values stolen, but the weights to be attached to harm to the person can be only roughly estimated.

Unfortunately, the only currently available national information is on offenses reported to the police, and since the proportion of all offenses that are reported to the police varies from time to time and place to place, this is not a satisfactory source of offense data. The offenses listed in the Uniform Crime Reports are, moreover, not classified with enough detail to make it possible to compare their relative seriousness. There is, accordingly, an urgent need for regular sample surveys of the population, asking what offenses, if any, the respondents have been the victims of. If the offenses are appropriately defined and classified, they can be given weights corresponding to their degree of culpability, to obtain an index of criminality, or to the harm suffered by victims, to obtain an index of victimization.

Even the degree of aggregation that is possible in the areas of health and crime is practically out of the question in many other areas. And even where aggregation is possible, we may, as said before, need disaggregation even more, because of the importance of detailed information, and because disaggregation often gives us a greater chance of relating variations in a social indicator to the factors that cause it to change.

The possibility of aggregating social phenomena that do not have a market price is nonetheless very important to any discussion of the measurement of community values. It will be practically impossible to make general and regular use of information on community values unless this information is capable of being summarized, at least to some degree. If there is nothing approaching consensus, even on which points are important, the results of any valid inquiry into a community's values will overwhelm the capacity to store and assimilate information. In such a case, moreover, the phrase "community values"—indeed, even the word "community"—can have little meaning. Any uniform, community-wide public policy will be unpalatable to most of the citizenry. If, on the other hand, there is some degree of agreement in a community (such as was revealed in the discussion of the seriousness of different crimes), then some meaningful aggregation of social information will be feasible and when such aggregation is feasible we can meaningfully assess some general changes in social conditions in terms of community values.

EVALUATION

When the social indicators measuring a given area of social concern are available, it is then, in principle, possible to make interesting quantitative statements about a community's values.[2] Once the amount of a given social good, or the severity of a given

[2] I here neglect some important problems involved in aggregating individual values into a social welfare function, which Kenneth Arrow has brought to our attention, because I do not think a discussion of these problems would further the discussion here.

social problem, is known, it begins to be possible to determine how much value individuals place on a unit change in the social indicator, because we can then hope to take account of the effect the existing level of a given social good or evil has on the evaluation of a change in it.

According to the conventional wisdom in some quarters, the value of such a change cannot be specified, even approximately, in monetary terms. Some social goods are so precious to the community, so it is said, that it would be absurd to put a dollar value on them. This sort of argument is appealing on superficial examination, but cannot withstand scrutiny. Whenever the community allocates its resources to one goal or another, it implicitly or explicitly trades off movement in the direction of one goal against movement in the direction of the other goal. A community's resources are fungible, at least over the long run, and can be used by the people in the community to buy private goods in the market, or seek this or that social goal through some collective mechanism. No rational decision about the allocation of resources between one type of purpose or another would be possible if no judgment about the relative importance of these purposes could be made. The statement that a social purpose is so important it cannot be measured in monetary terms is therefore logically equivalent to saying that all of a community's resources should be devoted to that social purpose.

DEFINING OBJECTIVES

Now, let us for a moment assume that all the desired social indicators were available, and that community values were also so well known that the value to be attached to a unit change in each social indicator was known, even in exact dollar terms. Would all this information provide an adequate basis for rational choices among alternative public policies?

Clearly, it would not. We also need to know which social policies would be most effective in achieving the community's ends. Some policies might be intended to bring improvements of the kind the community would value most highly, yet be ineffective. Other programs might have a positive effect, but use up so much resources that they would not be worth their cost. To make confident choices among alternative policies, we need to know not only how much value the society places on each social objective, but also the quantitative relationship between the resource inputs and the social outputs, and have an inventory of the available resources as well. As Kenneth Boulding's essay in this volume says, it has long been clear that "actual choice depended not only on the value system but also on the opportunities that were open."

The need to compare the value a community places on a particular public objective with the cost of attaining that objective (that is, with the satisfaction of community values that would have been attained by using the same resources in another way) is particularly emphasized in the Planning-Programming-Budgeting (PPB) system. Since the PPB system has been recommended as a method that can help planners decide on transportation policies that take better account of community values and resources, and has been used to some extent in the U. S. Department of Transportation, it will be helpful to look at some features of this system before turning to the relationship between community values and urban transportation policy.

The PPB system typically focuses on the budget of a given agency or department. It is designed to facilitate better decisions about how the moneys in that budget should be spent, and about how large that budget should be. The most elementary step in PPB analysis is reclassifying the budget of the agency or department in question. In the past, government budgets were classified only in terms of appropriation categories that reflected mainly legislative and administrative history, and, at a lower level, also in terms of the particular resource inputs that were used. PPB analysts attempt to classify budgets also in terms of the objectives they are to serve. Thus, in the Department of Defense, PPB analysts classified the budget in terms of the goal of deterring strategic nuclear attack, the goal of limited war capability, and so on, which contrasts sharply with a budget classified in terms of traditional distinctions such as Army vs Marine Corps, or in terms of types of resources such as personnel and equipment. When the expenditures of an agency or department can be examined in terms of the purposes they

are supposed to serve, it is possible to think more relevantly about whether the allocation of the available resources is consistent with social or community values, and also possible to study the relative cost-effectiveness of different public programs.

An optimal choice of public policies plainly presupposes a quantitative knowledge of the cost-effectiveness of public programs. Unless we know how much good a public expenditure under a particular program does, we cannot know whether or not public purposes would be better served by shifting that expenditure to some other program or purpose. The PPB system accordingly calls for intensive efforts to determine what the output of each public program is, and/or attempts to specify this output with as much quantitative specificity as possible.

Advocates of the PPB system are, to be sure, not alone in calling for better evaluation of the effects of public programs. The most perceptive policy-makers must always have appreciated this need, which in recent years has been widely accepted by many people who know little of the PPB system. This recent widening of interest in the measurement of the output of public programs, is, however, almost certainly due mainly to the effect the PPB system has had on the level of debate about efficiency in government. If the PPB system had no further consequence than this, it might still have been worthwhile.

The idea that it is practically useful to specify the kinds of information and types of reasoning needed to attain an optimal allocation of resources, even though it is obviously impossible to achieve a perfect allocation of resources in the real world, is important in itself. A statement of the necessary conditions for an optimal use of resources provides a clear picture of the type of information we need, and forces us to think more carefully about our alternatives. The concept of optimization has proved useful not only in the PPB system, but in economic theory and operations research as well. Indeed, the PPB system inherited the optimization approach from economic theory and operations research.

The PPB system can even usefully be conceived as a step in the evolution of the application of the optimization approach to problems of the public sector. In a sense, the first application of the concept of optimization to public decision-making was through operations research. Operations research, in one form at least, began in Great Britain in World War II, when some scientists and mathematicians applied their mathematical skills to the solution of some narrow and well-defined tactical military problems. As operations research has advanced since then, it has become increasingly clear that it involves optimization—that is, requires that the outcomes of alternative courses of action must be compared in terms of some criterion of desirability, so that the "best" solution (in terms of the values of those who make the decision) can be chosen. (As Mantel and Dean's article on "Community Values and Operations Research" in this volume puts its, "Specifically, the function to be optimized must contain a set of measurable objectives and a set of weights that scale the individual objectives by relative importance.")

A major shortcoming of at least the earlier attempts at operations research (operations research as Mantel and Dean conceive it is so broadly defined that it merges into systems analysis, and thus generally avoids this shortcoming) is that it involves "suboptimization". Suboptimization involves finding an optimal solution to a narrow or tactical problem without considering the relationship between a given solution to the particular problem at issue and other problems of society. Thus an operations research technique might be used to improve, say, the efficiency of a given bomber force, but would neglect the question of whether the task the bombers performed would be better done by missiles, or even by a more pacific foreign policy, and ignore the effect of the bomber force operations on, say, civilian air traffic or the effect of bomber bases abroad on foreign policy problems. Operations research can then neglect the greater gains that could sometimes be obtained by applying the optimization approach at a higher level, and even sometimes make the whole worse by making the part better.

The PPB system can perhaps best be seen as operations research applied to broader problems than those that operations analysts had been tackling, so that suboptimization would be less severe. Instead of looking at a narrow or tactical problem, the PPB analyst would look at the purposes and budget of an entire agency or department of

government. The PPB system was developed in part at the Rand Corporation, which had done a good deal of operations research for the Air Force, and was first applied in the U. S. Department of Defense.

When the PPB system later came to be applied to the domestic agencies of the federal government, as it has been since 1965, a new problem emerged. In the case of defense, state and local governments and the private sector do not share major responsibility with the federal government. But they do share responsibility with the federal government where social programs are concerned. Education, for example, is supported not only through the U. S. Office of Education, the Job Corps, and the training programs of the Department of Labor, but also (and on a much larger scale) through local governments, the efforts of parents, private employers, and even the television screen. The progress made in dealing with almost any basic domestic objective depends not only on some particular department of the federal government, but also on other departments, a host of state and local governments, and the private sector.

This means that the PPB system, which now operates mainly on a department-by-department or agency-by-agency basis, cannot by itself provide all of the analysis that is needed for rational policy-making. It can usefully analyze many social programs but cannot, as presently constituted, take sufficient account of the interdependencies among different levels of government or different sectors of the society. PPB analysts have recognized this, and there have been a few hesitant steps in the Bureau of the Budget to apply the PPB system across the whole range of federal government programs. But this cannot be sufficient, even in principle. To obtain a balanced assessment of national policy, we must take account not only of the federal government, but of the whole social system.

OPTIMIZATION APPROACH

The need to consider the whole range of social mechanisms for achieving an objective is particularly clear in the case of highway and transportation policy in urban areas. If planning focuses on a given highway project or budget, and simply seeks the best freeway for the money, it is particularly likely to suffer the most severe shortcomings of suboptimization. There are several reasons for this.

First, an improvement in a particular highway could make the whole city auto traffic system worse, because a better road at one point could cause extra congestion at another, thereby slowing up people who had different origins or destinations and used different routes. This means, of course, that the optimal expenditure of state and federal highway moneys depends on the street pattern and plans of the municipalities in a metropolitan area.

Second, even an optimal expenditure of all relevant budgets for streets and highways could be unsatisfactory, for it might be the case that some of these moneys should be spent for some mode of transport other than the automobile.

Third, it is possible that even an ideal expenditure of all transportation funds, irrespective of mode (which would mean budgets that were not "earmarked" for any one particular mode), would not ensure an appropriate policy. The decisions that communities and individuals make about zoning, lot size, proportion of multiple-family dwellings, height of buildings, and locations of industries, offices, and shops can be inappropriate, and create a demand for more transportation than would be needed with better spatial arrangements. Since the transportation system not only is affected by locational and land-use decisions, but also in turn affects those decisions, this interdependence is especially important.

Fourth, even an optimal expenditure of all transportation budgets, combined with ideal patterns of location and land use for industry and residence, might not be satisfactory. Many of the costs of urban transportation do not show up in the budgets of transportation authorities, or even in the time and travel expenses of the citizenry, but rather in the form of polluted air or disrupted communities. If I have judged the program rightly, it is these latter, non-budgetary costs that are the particular concern of this Conference. And well they might be, for they can be decisively important.

Where does this leave us? Some might say that urban transportation problems are so complex that systematic, optimizing approaches are of no use. And the textbook variety of PPB system, clearly, is focused too exclusively on budget costs to provide the ideal environment for all urban transportation analysis.

But to ignore the logic of optimization, and the need for systematic quantification, can only lead us backward—backward into conventional wisdom and thoughtless maxims, such as "cut down on the use of automobiles in urban areas whenever possible", or "no freeways whatever through urban slums", or "the automobile is our basic form of transportation and nothing should stand in its way". These maxims ignore the fact that every situation tends to be at least quantitatively different from every other and therefore lead us astray. However difficult the task may be, we must try to analyze each system of urban location and transportation with as much care and quantification as possible.

What is needed is what might be called a "complex systems analysis" that would take account of movements in all of the relevant social indicators in a metropolitan area. This broader systems analysis would use the optimization approach, and thus be a logical extension of the PPB system, rather than a system in opposition to it. It would be to PPB what it was to early operations research. It would not hope for quick or striking results, because broader problems are more difficult than narrow ones. But it would recognize that policy decisions must be made each year, and that these most difficult problems must accordingly be tackled now.

The social reports on particular metropolitan areas that were recommended earlier could be the first steps toward the needed complex systems analysis. Your cities, just as social reporting at the national level, can promote such analysis for the society as a whole. If metropolitan social reports were attempted, and conceived in the way explained, they could ultimately help bring about transportation policies more nearly in keeping with community values.

REFERENCE

1. U. S. Department of Health, Education and Welfare. Toward a Social Report. U. S. Govt. Printing Office, 1969.

Discussion

John Stone

I am a local urban renewal administrator. I hoped that the federal office principally concerned with developing social indicators and a report on the state of the art would say that the state of the art is such that there are some indicators that we can work with. I am deeply depressed to find that the state of the art does not produce a methodology that is more than tentative. There is the sense of urgency in my situation that cannot afford to wait for the scientific solution to begin to deal with values. From where I stand, I do not know what kind of a revolution is going on, but some kind of revolution is going on out there.

I have an information system, too, that is not scientific; it is political, and it is immediate, but it is very articulate and I am getting a lot of information out of it. It says something about values and about social indicators.

Mancur Olson

Well, I am saying there is no way to have a completely or a fully rational policy in the absence of better information. One has to be satisfied with policies that are very likely to be, in important ways, unsatisfactory when one simply lacks the information to know what a more satisfactory policy would be.

I suspect that the individual planner or political leader must simply go out to the particular communities where he has responsibility and, in these communities, look around him and make, shall we say, a somewhat intuitive judgment as to the situation that prevails and as to the extent to which his program, or a hypothetical program, would influence that situation. In other words, I do not see any way of making policy that is altogether satisfactory without the right information.

Mattie Humphrey

The amount of information fed into federal programs, I think, has little to do with the rationality of the kind of programming. We have allowed profiteering to destroy people. This is irrational, but has been a built-in part of our system. Also, the supportive statistics of our programs—whether health, education, social work, or what not—tend to give abstractions about the situation rather than anything substantial about the learning. Then you want an additional layer of statistics that would give even more remote input. I, for one, feel you must look at the community as an organism if you are going to talk about anything in terms of a concrete wholeness.

Intuitively and analytically, I know that there are some things that you must do immediately. We can observe certain communities that have, as organisms, been pretty well killed. If we want to revive them there are some essential things that we can do now on the basis of present data. We could give the people living in those areas air rights for cooperatives or whatever they want to do with them. But I am sure you have other people in our metropolitan areas getting air rights where they have already displaced people. Also, when people are displaced for institutions, such as universities, the displaced people could automatically be given some use of those facilities. These are some of the immediate steps that could begin to reverse the present process.

We who live in affected communities know a great deal; we know the consequences of government programs. There are gross observations from large numbers of people. The information is available. The fact that you have not integrated it into your knowledge is something else again.

Reverend Robert Howes

There are certain agreed-upon common goods within metropolitan areas. There are certain common bads that prudent men would have to agree we should collectively diminish. In this process there are certain burdens of our collective life in metropolis which, because they are tangible, must fall on certain sections and certain people in the metropolitan area—such burdens as, for example, public housing or atom power as a source of energy in our cities. Dr. Olson has suggested that we are never going to arrive at a solution to the problem of sharing these common burdens in the metropolis through a process of laissez-faire—through a jungle warfare of introverted neighborhoods with no holds and no cliches barred in which the prize goes to the loudest or at least to the neighborhood that has the greatest immediate political clout.... Each neighborhood fighting a freeway, or a single neighborhood fighting an incinerator or public housing, may not make the problem so immense that it cannot be dealt with but, if neighborhood after neighborhood resists an incinerator that prudent men can conclude is necessary, this can be a very serious thing.

The question arises as to whether such intermediaries as universities, churches, business organizations, and other such groups can and should be useful in trying to create a pragmatic information fund for the citizens in our beleaguered cities.... I may be wrong in suggesting that there has to be some kind of metropolitan morality in which single places and single groups are willing to accept certain immediate inconveniences in the light of a larger common good. But whether there is a metropolitan morality or not, that there be a pragmatic acceptance of what is at least desirable may be subjectively perceived as a burden....

Alan Altshuler

Who is to define what gets measured when you have limited resources for measurement and how is one then to weigh the social indicators into program evaluations and social welfare evaluations? Where have the resources for advocacy planning come from in recent years to give groups that have been relatively weak in the political process an opportunity to make their inputs on the planning side in terms of developing alternative schemes and demanding that certain information that has not been collected in the past be collected now? It seems to me that, as we move toward developing a greater and greater informational base for our programs and policies, it is terribly important that we not leave this process solely to government or solely to the best organized and most powerful interest groups in the society.... One needs a pluralistic process of defining what is to be measured, what criteria of programs and of social welfare ought to be dominant in society. It is here that the universities, the churches, the various consulting organizations, the associations of the poor and so on have a great deal to say, and it is terribly important that they have a part of the process.

Part VI
Toward Solutions

About half of the Conference was devoted to finding solutions to the very difficult problem of providing improved transportation in dense urban areas. In the paper by Legarra and Lammers are given the recommendations of an extremely capable and experienced highway department. Two apparently highly successful case studies, one in Chicago and one in the Watts area of Los Angeles, provide indications of the variety of actions that can help to meet the needs of residents. Mantel's paper points the way toward operations research as a tool in planning.

Following these papers are printed excerpts from the chairmen's reports on the second series of workshops, together with a discussion of these reports. The Conference concluded with the presentation of two reports on special studies in the area of community values being sponsored by the National Cooperative Highway Research Program.

The Highway Administrator Looks at Values

J. A. LEGARRA and T. R. LAMMERS, California Division of Highways

It is all too often said that the highway organization and, more particularly, the highway engineer are basically insensitive to the preservation of those items of value that are difficult to measure and broadly included under the term of "community values". We do not believe that this has ever really been the case, but we do believe that there is room for improvement and that better ways of blending urban freeways into the fabric of our communities can be found.

Like any other highway organization, the California Division of Highways has learned a great deal in the past 20 years about working with local communities in reaching solutions to route location and design problems. In this period we have had adopted locations for several hundred miles of urban freeways. Obviously there has been considerable controversy on some routes, but when compared to the total miles the controversial miles become a fairly small percentage.

There is one main point that we believe is essential in every route study and that is adequate communication between the highway organization and the people involved. These people are all the people, from a single resident to all parts of the local governing bodies. An open-door policy with best understanding possible of just what is being studied helps eliminate any problems that are based on fear of the unknown, and places the honest disagreements on a more factual basis. We never expect to reach utopia and obtain 100 percent acceptance, but that does not mean we should give up trying.

In 1959 the California State Legislature adopted a master plan for freeways and expressways. This plan included some 12,600 miles of roadway with only the general location of the routes and the termini being described. This master plan was adopted only after a thorough study of the future highway needs of the entire state, along with considerable discussion of the proposals in almost every area of the state. This plan is subject to a mandatory review and recommendations for changes by the state legislature every four years, although additions or deletions can be made at any time by the legislature if they so desire. Of this 12,600-mile system, 7,700 miles have been adopted and 5,900 miles completed or under construction. This system incorporates all of the 2,300 miles of the Interstate System in California.

The final decision on a specific route location, within the general description established by the legislature, is made by a seven-member lay commission, appointed by the governor, called the California Highway Commission. This is a non-salaried commission and each member represents the state at large. The three principal factors that are considered by the Commission in reaching a decision are (a) community effects, (b) traffic service, and (c) right-of-way and construction costs of the freeway.

The last two, which played the more dominant role in the decision-making process for many years, have recently been relegated to the subordinate position, and now the community, or socioeconomic effect on the community, is generally the item of primary importance. The problem, of course, is determining the values and goals of a community as related to the freeway's impact in order that some measure can be applied to community effects. We have never attempted to assign real values related to community effects for any of our studies but, as stated earlier, we have not been oblivious to the problems and certainly make every effort to recognize them.

For each of our freeway location projects, we try to obtain a full comprehension of community values and effects from an exchange of information with the community itself. We are bound by laws, rules, policy, and procedures to communicate with local jurisdictions and groups affected by our studies. Specifically, some of these laws and procedures include:

1. Local approval of the project limits. This is to avoid the piecemeal approach and the problem of pointing the route without due consideration of the next community. It of course leads to longer and more complicated studies.
2. Initial and continuing contact with the governing bodies and technical staffs of local agencies during the study period.
3. Full dissemination of the results of our studies through a public hearing with the presentation of the local agencies' and public's views of community effects. Illustrations and models of the various alternate locations of the proposed freeway are shown.
4. Distribution of the State Highway Engineers' recommendation to other State agencies concerned with resources and planning, and also to the local governments affected.
5. A recommendation as to a specific location by the Director of Public Works to the California Highway Commission after having taken all factors into consideration.
6. Notification to all local agencies that the California Highway Commission intends to adopt a route.
7. A second public hearing by the Highway Commission if required by a local agency, or considered desirable by the Commission itself.
8. Adoption of a route location by the Highway Commission with a report detailing the reasons for adoption of this specific location.
9. After the adoption, and before right-of-way acquisition or construction can begin, an agreement must be reached with the local agency concerning the effect on its streets. Concurrence must be obtained on street crossings, closures, adjustments, and interchange location.

Our philosophical approach to route location studies enthusiastically embraces these statutes and procedures. In fact, we go much beyond these. We attempt to communicate with all elements in the community that are concerned and interested in our studies. The elements would include the schools, the overall business interests through the local Chamber of Commerce, specific businesses and industries directly affected, churches, and home-owner groups, as well as the local governing bodies. Only by contact with all these elements can we begin to obtain the full spectrum of opinion, views, and attitudes that make up the community values.

In an effort to reconcile differing viewpoints between adjacent cities involved in a particular route study, we often help organize or participate in already existing committees comprised of local staffs and/or officials representing the communities affected in the studies. This helps bring an understanding of the other city's values and goals to the participants. Sometimes these committees are fruitful in recommending a mutually agreeable alignment to the councils of their respective cities.

Route determinations in California take a much longer time to accomplish than either we, or the people involved in the communities, would like. Four years is often a minimum and this is largely due to rules and procedures that are needed to keep everyone involved informed and that guarantee their right of participation. We have not found that delay or a continual extension of the study process either makes that final decision any easier or more palatable.

The following are some observations on what attitudes and values we have encountered during our studies.

Opposition to a proposed freeway might be categorized as individual and community. An individual's opposition is often emotional and is rooted in the economic and financial stake he has in his home. Nearly all individuals that are opposed to freeways are single-family home owners who are on or near one of the study lines. The home owner does not know whether the freeway will take his house and he fears he will suffer economically if it does, or it may leave his house right next to the freeway with the subsequent problems, some real and some imaginary. Those who rent homes or apartments are generally not concerned. They have no economic stake in their home, consider themselves transient, and for the most part believe they will move long before the freeway is built.

Owners of businesses and industries are not generally worried by the prospect of a freeway nearby. In fact, they usually are pleased with the exposure and accessibility

such a freeway would afford. However, they do strongly prefer that the freeway stay outside of the industrial or business development. If it is necessary that the freeway encroach within such a development, businessmen can face it less emotionally than home owners because they are generally confident they will be compensated for full value.

Communities acting through their city councils reflect to some extent the views and fears of the home owners and businessmen threatened by the freeway. In addition, many of our smaller cities act in a very chauvinistic manner. They fear the freeway will split and disrupt their city. They fear loss of identity and a loss of tax revenue and population. They may recognize the need for a freeway in the area but very often they desire that it be on their boundary just inside the next city. They are very jealous of their territorial integrity and are not prone to subordinate their own interests for the overall good of the area.

The positive factors favoring freeways are difficult to bring out. In our location studies, there are numerous forces that recognize the need for added transportation facilities and silently support the freeway. The great majority of people, who are not directly affected by any of the studies, are the silent majority. The vocal minority is very outspoken, but we find it difficult to determine to what extent they are supported by the community as a whole. Community leaders also have the same problem and sometimes they tend to bow to that vocal minority. It takes a degree of civic responsibility and courage for community leaders to stand up in positive support for a freeway through their community. Sometimes these leaders may privately desire the freeway, but for political expediency will be publicly ambivalent or even oppose it.

Business and industrial leaders, who generally recognize and support our freeway system, often favor some of our study lines that avoid industrial or business properties, even at the expense of encroaching into residential areas. Many times these industrial and commercial leaders will not publicly support a specific freeway alignment. Perhaps this is due to a reluctance on their part to antagonize groups of local home owners.

Opposition, then, is vocal and sometimes very strident and emotional. Our supporters are usually low-keyed. The net effect can deceive a casual observer into thinking that the proposed freeway is a necessary evil or even an unnecessary evil.

In general, we have a conflict of interests on most of our studies. Home owners want the line through industrial areas rather than residential areas. Business interests feel that they support the community and provide jobs, while home owners can relocate any where. A city or community wants and needs the freeway but it should be located just outside their city limits. And when any study line appears to be gaining support from several elements in the area, the residents on that line may oppose and question the need for any freeway at all, sometimes arguing that another mode of transportation is really needed rather than more freeways.

As a generalization, we have found that all but the very largest cities are very concerned about preserving the maximum acreage for future industry and commerce. Most cities in southern California abhor the bedroom-suburb identification. They aspire to become a well-balanced city with their own distinct identity. To achieve this, they try to attract industry and commerce so their citizens can shop and work near home. To enhance their image and instill pride in its citizens, many of the newer cities have invested in new, very attractive civic centers and maintain all their own staffs, complete with police and fire protection. There are a few cities, usually of well-established expensive homes, that are the exception and want to remain primarily residential. We must identify and seek to conform to each city's goals early in our studies. Since there are 77 cities in Los Angeles County and 25 cities in Orange County, often with very irregular boundaries, trying to accommodate the diverse desires of all the communities involved in any one of our projects has proved to be one of our knottiest problems. Also, since the majority of our cities are less than 100,000 in population and still growing rapidly, their goals and objectives are not always too stable.

No one city of the size we generally affect can easily analyze, nor can we compute, the direct benefits they may receive if a given route is built, or the losses if no facility is constructed. They must recognize that, in an urban complex, transportation is

absolutely essential and without it a particular city or community may have little reason for being. A community cannot reap the benefits of close association in an urban complex and not accept its responsibility in seeing that the total goals of the area, including transportation, are fulfilled.

In order to bring some of the problems and values more into focus and to explain our approach in dealing with the communities, let us take examples from our Los Angeles-Orange County urban complex. The suburbanization that has spread outward from major communities like Los Angeles in the past 20 years has developed and continues to develop large areas that are almost totally dependent on the automobile. Even with this dependency on the automobile, with other modes of transportation quite some time in the future, there is always some resistance to the intrusion of a new freeway into a community.

The first of several projects we will use as examples is a 7-mile segment of Route 39, which runs north from the coastal area of Orange County. The studies began on this route in the early 1960's, and at that time there were several established communities clustering around their old downtown cores. The large part of the area was open flat farmland just on the verge of development. Because of effort needed on other projects in the area, we were unable to proceed as rapidly as we would have liked. As the studies progressed the area changed almost faster than we could keep up with it. For example, the population of one city involved increased from 11,500 in 1962 to 93,500 by 1967. What was unimproved land traversed by our study line alternates quickly became built up largely with homes.

There were five incorporated cities directly affected by these studies and several more by the study line extensions to the north. In 1964 the mayors and staffs of these cities formed a committee to try to resolve their differences on where the route should be located. After a number of meetings over a one-year period, no agreement could be reached. We attended most of these meetings to present information and discuss possible alternatives. Several of the cities favored study alternates that stayed almost completely outside their corporate limits. Two cities, which could not be avoided, were primarily concerned with keeping the freeway outside their industrially zoned but as yet unimproved areas. We were unable to devise any practical study alignment that would meet the desires of all the cities involved.

As we neared the completion of our studies in 1966, the County Supervisor representing this area set up a series of discussions and meetings between the leaders of the communities, trying to obtain some acceptable compromise route location. The Division of Highways staff participated at these meetings to the extent of presenting the economic and land-use results of our studies and answering questions. On one occasion, to insure that each community had an understanding of the other's problems, we conducted a bus tour (arranged by the County Supervisor). This tour was along each of the study lines through all the cities, for all of the community leaders. At this point, prior to our public hearing, we had no line preferences.

In the weeks before our public hearing in June 1967 each of the five cities directly affected had its own public hearing. Private citizen reaction at this stage was generally indifferent except for one city. That city's preference traversed a well-established neighborhood where a large number of homes were less than five years old. The home owners organized themselves in opposition to the City Council's preference and supported, instead, an alignment adjacent to a railroad that affected very few homes in the city but would have required industrially zoned land. Despite their efforts, the City Council refused to change its position.

As a result of information obtained at our first hearing, the Division held a second hearing to present a compromise alignment that we believed might gain acceptance. We were not successful. After sifting through the mass of testimony from the two hearings, the State Highway Engineer recommended the most easterly line that lay adjacent to a power line, an existing barrier. His recommendation affected the most homes, but no industry or industrially zoned property. In the absence of any agreement among the cities, his recommendation for the route distributed the impact of the freeway, in terms of homes taken and tax loss, most equitably among the cities.

After this recommendation several individuals in housing tracts affected by our studies mounted a crusade against two of the study lines that affected the most homes. These few active individuals through their strenuous efforts galvanized the entire community. Thousands of signatures were collected. There was extensive local news coverage. The beach city council after some stormy meetings was forced to retract its previous preference for the residential line, and recommend the railroad-industrial line. This alignment virtually wiped out a new subdivision and new industries under construction in the neighboring city to the north.

A third hearing, this time by the California Highway Commission, was held in July 1968 and there was considerable local citizen opposition to the recommended line. Again, no basis for any compromise line acceptable to everyone could be found. The California Highway Commission adopted the recommended line in October with a split vote, which is extremely unusual, but does indicate the difficulty in finding one route that is completely acceptable to any group that tries to make an evaluation.

Even though there was never total agreement among the cities on route location, there were two items on which everyone could agree: first, that a freeway was needed, and second, that the decision should not be delayed. When this type of an atmosphere can be obtained during the route selection process, the final design of the project usually proceeds much more smoothly.

The second project is Route 1 in Laguna Beach. Laguna Beach is a rather unique community along the south Orange County coast. It, along with several adjoining county areas, completely occupies a narrow shelf between the Pacific Ocean and a small mountain ridge. It is an artists' colony and a tourist center, with essentially no industry. The traffic demand obviously was parallel and reasonably close to the ocean. All of our initial studies attempted, where possible, to squeeze in between homes and the steeper hillside above them.

At the very beginning of our studies a community organization was formed called the League of Orange Coast Community Associations (LOCCA). Although they obviously had strong feelings about where they would prefer the freeway, and were primarily organized to oppose a coastal freeway, we were able to work with them and exchanged information.

Because of what we learned through this contact and in part through their urging, we agreed to look at an inland line some two or more miles removed from the basic studies. We did not initially believe that an inland line would satisfy the transportation needs of the area but did believe it warranted study. On completion of our studies, when weighed against the impact of the coastal alignments, the inland line appeared to be a reasonable alternate. It would provide fair traffic service to the coastal area and good service for future development inland.

As mentioned earlier, we do not hold a public hearing until after the results of our studies are furnished to those who will probably be making presentations at the hearing. On this particular route we allowed extra time between the time our results were furnished and the hearing, to allow the LOCCA group to study and prepare for the hearing. One of their prime goals was to weigh community values (with a dollar figure) to prove the worth of the inland line over the coastal lines. They were unable to accomplish their goal even though they had a group of citizens with more than average talent to put to the task. They did, however, put forth a rather detailed discussion on the many items of community value that should be considered; schools, art and cultural center, library, hospital, parks and neighborhoods. They also accented the positive values of the inland line in terms of future growth. This was one of the most effective and constructive groups with which we have ever worked. The inland line was recommended and adopted without the need of a Commission hearing, largely due to the thorough understandings developed with the local people during the studies. This citizens' group was headed by six community leaders who met regularly for almost four years to obtain information from us, to understand the problems, and to discuss alternatives.

A third example is where two cities have made serious efforts to determine where the freeway should be located within their borders. This is along the northerly 8-mile

segment of the future Route 39 Freeway in Los Angeles County. Staff members and officials banded together in a committee along with highway representatives beginning in 1967 to mutually study and possibly agree on an acceptable route location. We had only begun our studies a short time before, and the cities felt they should not wait until the alternatives became too well fixed. At about the same time, one of the cities hired a recognized consulting firm to analyze route alternates and make recommendations to that city. Near the conclusion of this report, the city appointed a Citizens Critical Issues Committee of about 80 citizens to study various aspects of the freeway's impact and arrive at their own independent conclusions. The committee and its subcommittees worked many hours in completing their reports, and presented their recommendation to the City Council.

Similarly, the second city also hired a consultant and simultaneously appointed a Citizens Blue Ribbon Committee to study the freeway location problem. We make every effort to furnish all available information to consultants and committees working on projects such as these. We also are more than willing to meet with them at any time to discuss the project.

At the present time, neither city council has acted upon these reports. In one city, the residents living along the line recommended by the Blue Ribbon Committee and the consultant angrily faced the council when they were to consider the recommendations. The council postponed any action.

The results of these local efforts have been to focus on a possible freeway alignment that is practical and could be acceptable to all the communities affected—at least this is the determination of the coordinating committee, the consultants, and the citizens' committees. There has been as much local citizen involvement in this decision-making process to date as can normally be expected. But, characteristically, most of the people directly affected by the study lines have not yet raised their voices to any great extent. This is because their councils have not taken action on the recommendations made to them for a particular line, and we have not announced a public hearing. We expect our studies to be complete in about a year and we will be interested to see if the intensive local involvement and efforts of the cities' leaders will make the route selection process more palatable.

A fourth situation is the Route 1-107 Freeway in the South Bay area of Los Angeles County. This is an almost completely developed area of moderate to expensive homes with extensive industry and commerce. For several years, beginning about 1965, we worked closely with a committee representing all five cities directly affected. They had no success in agreeing on any alignment. Although there was good publicity regarding our studies, we developed little citizen interest. Finally, our studies were completed in mid-1968 and we conducted a number of public informational meetings in the area. Public informational meetings are held at any time during the study period but most often just after we have completed studies and prior to the public hearing. This allows for maximum dissemination of information so that people can decide if they need or desire to attend the formal public hearing. We were surprised by the intensity of the public reaction. Our meetings were attended by thousands of people. The cities conducted local public hearings, also attended by thousands, so that they could make recommendations at our public hearing, which was held in October 1968. State law requires that before a local agency can make a recommendation on a freeway alignment, it must hold a public hearing.

In the South Bay, the community leaders and the populace could not seem to get interested in our studies until our hearing and a decision was near. When they realized the imminency of the decision their reactions were mixed. Many thousands of families felt threatened by the various study lines. There was strong feeling among many home owners to oppose any freeway intrusion into the area. One city did, in fact, officially take this position. The council of the major city affected endorsed one alignment but the vote was split, with several members opposed to any freeway.

We do not really know how we could have done differently to obtain more local involvement earlier on this project. It does point out that, without thorough understandings during the study period, emotionalism is going to be much greater and good, sound, constructive comments at a hearing will be fewer in number.

In these several projects mentioned there has been little comment regarding specific items that are important community assets. What we have been trying to bring out is that we, in highway organizations, cannot sit in judgment by ourselves and reach conclusions on community values. We must involve ourselves early with the community, and through these contacts attempt to learn what their goals and objectives are so that, wherever possible, we can develop our studies to complement them. We cannot make their decisions for them but we are hopeful that we can assist them in the decisions they must make.

In the past, and probably for some time to come, we will continue to develop data relating to route studies that are almost entirely objective. At each public hearing we have a handout entitled "Report of Route Location Studies", which includes considerable amount of information. Information included consists of a study line map and several tables, appended to a narrative that compares economic and land-use data.

The number of alternates considered and presented usually is greater in number than might be desirable but often is necessary to insure the widest possible range of community effects. Although benefit/cost ratios have been included for some projects, we are tending to use them less and less. We have found that this ratio usually does not vary significantly for urban freeways and therefore is of little value in these areas in helping us, or the communities, reach a decision. Two pages of the handout give detailed information on types of property affected and the effect on the local tax base. This is one way we attempt to relate the effect or impact on one city to another, by comparing several easily computed factors, but there is no subjective analysis of community values.

In order to give the public the best understanding possible of the alternate routes for a project, in addition to the handout material we make a formal presentation. The presentation describes briefly the various physical features of each alternate and the major controls that influenced the selection of routes. Using slides, we show the base map and controls, a description of each alternate line, retouched photos showing major controls, and so forth.

Although we have been doing a good job of evaluating alternatives with the tools available and within the limits imposed on us, I think that in today's society, with today's values, we must find additional methods in order to properly compare alternates.

What are the real values in a community and how should they be ranked? We need more information on types of housing required and affected. We need better understanding of neighborhoods. Are they stable, changing, or where is a change likely to occur? Will the impact of the freeway be beneficial to the adjoining area, or will it just be an intrusion? How will, or should, land use change when the freeway is constructed? Freeways can and do bring change that will increase a tax base in a community. This should be evaluated to offset the mass of data now generated that only indicate loss of tax base. There are many other items that must be considered and the number and type will vary as communities vary in size, goals, and objectives.

Briefly, we need to study more than how we can ease a freeway around and between the many recognized controls. After you have plotted all the usual controls such as schools, churches, hospitals, parks, cemeteries, neighborhoods, and commercial centers on a map, the problem of locating a line through this maze is similar to laying a stiff rubber hose on the map and bending it around until the best balance is obtained. We need corridor planning as a part of the freeway planning. We might just learn that some of these controls can find the freeway a good neighbor, others would benefit through relocation, or a transitional area could use the impetus of the freeway for a more rapid rate of change for the better.

We have yet to try this approach in California on any route study project, but an approach we are using on 17 miles of urban freeway being designed in the Los Angeles area may well be the forerunner for such studies. On this project we believe that studies along this adopted route by a team that includes the highway organization, a multi-discipline consultant, and the local agency will develop opportunities to minimize any adverse effects caused by the intrusion of the freeway, and maximize the potential of the high-volume transportation corridor. Or, as Johnny Mercer indicated in one of

his songs some 25 years ago, "You've got to accentuate the positive, eliminate the negative, and don't go with Mr. In-between!"

Other states in the country have used, and are using, the "team approach" on their projects with varying success. However, the concept of looking at a wider corridor with a broader base for ideas certainly has tremendous potential and we will surely be seeing more of it in the planning process. We must not lose sight of the fact that, since the local agency controls land use and zoning, they must play a very active role in any corridor planning that is undertaken.

To summarize, then, some of the major points that must be considered in our planning process when we are trying to make community values a part of the analysis are:

1. Try for as much early involvement as possible with all interested and affected groups to better understand local problems, goals and needs.
2. Keep open lines for communication, and do not withhold information unless it is too preliminary and therefore possibly misleading.
3. If local groups do not exist that have an effective base to disseminate and obtain information, try to assist in developing one or more.
4. The freeway should not be thought of as a narrow band for transportation, only; think in terms of the corridor and how it can be enhanced because of changes required by the freeway.
5. Always attempt to keep the local press and public informed regarding the project status; undue controversy and often delay result due to misunderstandings that are widely publicized.
6. Look at all possible alternatives and do not hesitate to try the new or unproven.
7. Above all, be a good listener, to find out just what the community is saying.

Watts-Century Freeway

STUART L. HILL, Senior Right-of-Way Agent, California Division of Highways

The termini of the Century Freeway, Interstate Route 105, were set by the California State Legislature in 1956 to be between Route 405, near Los Angeles International Airport, and Route 605. Studies to fix a precise location began shortly thereafter and were split into two study segments. The first study resulted in selection of a route from the airport to Central Avenue in 1965. The second study, extending the route easterly from Central Avenue to Route 605, resulted in route adoption in the summer of 1968.

The second study, from Central Avenue of Route 605, received the most widespread scrutiny and interest. Central Avenue was, for many years, the most westerly boundary of Watts, and the Century Freeway studies looked at potential routes right through the heart of Watts.

In California our route studies take into consideration three major factors:

1. The effects that the alternate will have on the communities through or around which it may pass.
2. The degree to which the alternate will fulfill existing and future traffic demands.
3. The initial cost of the alternate, including both construction and right-of-way.

On the Century Freeway studies, cost factors seemed to favor the southerly alternates and traffic benefits appeared to favor the northerly alternates. Clearly, community impact would be decisive in determining the location of the route.

Introduction of a major transportation improvement into the urban environment disrupts the community—its patterns and established relationships. Means of minimizing the disruption and obtaining community support for our programs is one of the objectives of this conference.

In California the adopted route of the proposed Century Freeway has achieved not just community support, but advocacy from a community it severely affects—the community of Watts.

"Time" magazine claimed that one of the causes of the Newark riot was the "Negro removal" by three Interstate Freeways. Replacement housing was not available for the thousands displaced by freeways. In Watts, we face a similar problem—only we have already had a riot. Two freeways interchange in the heart of the community; 2,600 families will be displaced. The housing units affected are low-cost; half are owner-occupied; 20 percent of the occupants are retired and on fixed income. It is impossible to replace this housing. The average value of the houses to be acquired is $13,000. The cost of comparable homes outside of Watts would run between $18,000 and $22,000.

Watts is not an average community. It is black; it has been wracked by a riot; today it is not much different than it was in August 1965—the root causes of the riot are still there.

There is one major difference that had tremendous import to and impact on our freeway proposals. Since the riots, federal, state, and local agencies and universities from all over the world have launched studies of Watts. Residents are besieged by door-to-door surveys. Even the U.S. Census Bureau did a special census.

Tours of Watts are constant and endless as dozens of remedial programs are proposed by innumerable government agencies. Millions of dollars have been spent in Watts in the last three years. The results: a great many promises for change; a significant increase in the daytime white population.

But even more foreboding for highways, the Los Angeles Community Redevelopment Agency, for a number of years, had studied Watts and had submitted a plan for redevelopment to public hearings. Coming on the heels of a great many other proposed

programs, some seemingly exploiting the community, the redevelopment plans were completely rejected by the community and nearly all proposals for community improvement began to be suspiciously regarded as an attempt by the white power structure to break up Watts and scatter its residents all over Los Angeles. This issue and this idea was beginning to pervade Watts at the time our freeway proposals were introduced.

In the face of this, we obtained acceptance of the freeway and support and advocacy of a route right through the community. The results are dramatic, but they represent the routine practices of the California Division of Highways and good planning procedures.

We achieved these results by involving the community in the development of our plans and by taking into consideration the impact and effect of the freeway. It has always been the practice of the California Division of Highways to involve the local community, local groups, and service clubs at early stages in the planning process.

In California, termini are set by the State Legislature when they designate a highway as part of the state highway system. The California Highway Commission selects the specific location of the highway or freeway after public hearings. Although broad design features may be set by the location of the highway, detailed design follows location of the highway.

Throughout the highway route location process, prior to adoption by the Commission, the highways staff presents their studies to local city technical staffs, to concerned government agencies, to local interest groups, service clubs, garden clubs, in fact, to anyone who is interested in hearing our story. The net result, we hope, is a fully informed public at the time of the Division's hearings on the route location.

It is interesting to note that such procedures preceded hearings on the Panhandle Freeway in San Francisco. The "Technical Report" on the Panhandle Freeway was a joint city, county, and state study of freeway route locations and design. This report, also co-authored with Lawrence Halprin, presented publicly early concepts of joint development and multiple use of right-of-way.

However, despite local participation in planning and employment of well-qualified consultants, we lacked the legal means then of achieving some of the broad planning goals and that freeway (and ultimately others) was rejected by the community.

Public involvement in our planning activities continues after route adoption during the design stage. In addition, the California Division of Highways negotiates and executes with the local community a freeway agreement that sets some of the features of the proposed freeway.

Identical procedures were followed in Watts during the route location stage. We contacted local groups in Watts, including the militant organizations that receive so much publicity in the national press. We contacted home improvement associations, street improvement associations, garden clubs, churches, every conceivable group that seemed to have an interest in the effect of the highway upon this community, and Watts has a plethora of groups. We presented our story to them, what we proposed, the nature of the highway investment, and the anticipated impact upon residential property within the community.

It became evident that the huge right-of-way investment to be made in Watts—around $100,000,000—provided a rare opportunity for Watts. Unless a program was developed, it could be dissipated throughout Los Angeles. That is, the recipients, the homeowners, the individuals directly affected by the freeway, most likely would take their payment and leave Watts. Yet this community, which had suffered so much during the riots and after the riots, could use the investment in right-of-way to improve and upgrade the community.

Since the riots, normal economic activity has dwindled in Watts. The publicity of the riots has made investment institutions, banks, and speculators—conservative in most cases—reluctant to invest any money in Watts. As a result, there has been almost no money for housing since 1965. Loans for new housing have been nearly nonexistent. The right-of-way acquisition program of the Division of Highways could be an opportunity to stimulate real estate development within the community again, an opportunity to use the right-of-way investment to renew or rehabilitate the community, to give it a new start on building its own identity in a more satisfactory environment.

With this in mind, we developed a different strategy for land acquisition in the Watts community. The key item in this strategy involved replacement housing.

Of the properties to be acquired in Watts, 95 percent are residential and, as previously stated, half are owner-occupied. Our survey indicated only one-third of the affected residents really wanted to relocate outside of Watts. Most of them had lived there many years—their roots were there, their friends were there. Community activities and organizations remained in the community—they had no desire to leave. The people affected by the Century Freeway are part of the most stable elements in Watts. Displacing them would leave a vacuum in Watts that would be hard to fill.

Learning from our experience in San Francisco, we formalized our replacement housing strategy before the freeway route was adopted by seeking legislative sanction for the idea. Governor Ronald Reagan included in his 1968 legislative program a bill, proposed by Assemblyman Leon Ralph from Watts, to provide for the development of a replacement housing program in California. This legislation provides that the Division of Highways may acquire and condemn vacant unoccupied property outside freeway right-of-way and that it may contract with public and private entities for the financing, planning, development, construction, management, sale, and exchange or lease of replacement housing, in order to provide replacement housing for low-income individuals and families who reside in economically depressed areas of the state and who are displaced by freeways. It further provides that we may acquire other property for such purposes by means other than condemnation.

Our first approach to the problem in Watts was very similar to our proposals in San Francisco for the Panhandle Freeway, with high-rise apartments alongside and straddling the freeway. We envisioned the freeway as upgrading the living conditions and environment of Watts through modern buildings. We even embellished the corridor with industrial sites to provide jobs for the 40 percent unemployed in Watts. But these visions do not fit Watts. They do not represent the aspirations, goals, and desires of its residents—most especially those affected by the freeway.

The vast majority live in single-family dwellings—small units but with fenced yards, privacy, and a garden. Their house is a status symbol—especially to the retired Negro who worked and saved all his life to acquire his own home. An apartment may easily replace the functional utility of the home, but it would never have the same diginity, meaning, and comfort. The replacement housing program must primarily involve single-family dwellings.

At the present time, it is proposed that the Division of Highways acquire scattered lots throughout an area roughly six blocks from the core of the freeway. These lots will be developed individually with single-family residences and a few multiple units. It is expected that our activity will generate additional activity by other nonprofit organizations that are attempting to develop programs in the community. We expect that the improvement of housing in the neighborhoods we affect will stimulate additional development adjacent to and in the vicinity of our housing. We expect that the total development of all of this housing will encourage owners to apply for loans to upgrade their own housing. We expect that the investment involved in both our program and the other programs will persuade banks and lending institutions to make additional loans in this community for upgrading the community.

In Watts, we intend to implement the replacement housing program through continued community involvement. The replacement housing program will offer the community an opportunity to change the shape of their environment in the manner of their own choosing. In this connection, California proposes to involve a unique organization in Watts—the WLCAC, or the Watts Labor Community Action Committee.

The WLCAC is a community union. It is headed by Ted Watkins, an international representative of the UAW, and it is supported by the AFL-CIO. Its purpose is to put union skills and organizational experience to work in the community to attempt to improve and revitalize the community by promoting and providing much-needed services to its neglected citizens and to develop the economic base necessary for the area to become a healthy, self-sustaining segment of Los Angeles.

Their accomplishments to date have gone far to attain their goals. It includes the development and maintenance of over 20 vest-pocket neighborhood parks, two gas

stations, a nursery for the beautification of Watts, a chicken ranch, a credit union and last summer a youth camp for several thousands Watts youths—a camp that will be used in winter for training programs for Operating Engineers and Marine Cooks and Stewards. Most recently, they shared with the City of Los Angeles the job of preparing the Model Cities Application, and it is expected that if a planning grant is received from HUD, then the WLCAC will play an important role in planning the future of Watts.

At the public hearings on the Century Freeway, Ted Watkins discussed the importance of community involvement in any project in Watts and I would like to quote him:

> In our working with the kids, we see that the most important things to them are not necessarily the most obvious to a person living outside the community. We see the kids closely identifying with the parks they have built, buildings they have built, trees they have planted...and most of the projects they have helped to construct.
>
> The long-term success of any community program lies in the planning participation and use of these facilities by its citizens. If you impose a program, you run the risk of a reaction [which could include] vandalism. The use or quality of the buildings on the routes [of the Century Freeway] may not look like much to you, but destroy the identity with that building, and you destroy the kids.
>
> This people thing, which grows around certain functions and facilities, is the beginning of what holds a community together.
>
> Before you relocate people, you must relocate their identity to new images, and before you think about a route, you must look at the opportunities in an area for redirecting the community's attention.

In the state's replacement housing program, the role of the WLCAC looms large in directing the community's attention. Not only do they have planning capabilities, but their job-training program provides a source of labor and community participation in the job of providing housing.

For example, one of the replacement plans that our program will make possible involves moved housing. The Division of Highways and other public agencies acquire hundreds of houses every year for public projects in Los Angeles. These are sold at auction, moved, and rehabilitated for resale. This housing could be diverted to Watts. Utilization of this housing in a replacement housing program provides an opportunity to use the unique services of the WLCAC. They can use the site preparation, house moving, and rehabilitation to provide training and building skills for Watts residents.

The Century Freeway displaces thousands of residents in an area where a depressed real estate market makes replacement impossible through normal means. But, at the same time, it offers the community and the people of Watts an opportunity to improve and revitalize their community through total community involvement in a replacement housing program.

The Century Freeway through Watts could have been like any other freeway in the country. It could have approached the community without regard to the impact and the effect upon the people living within that community. It could have been just another case of "Negro removal" in the urban communities, but in California our experience with the Panhandle Freeway in San Francisco has taught us something. Beautiful pictures and sketches of joint development do not buy public acceptance. The changes wrought by the freeway must be channeled to match the needs and desires of the people in that community. The freeway must reinforce the change desired in the community, and most important, the program proposed in the pictures and brochures must be capable of attainment, not merely an embellishment to sell the product. To sell their product in today's urban environment, freeway planners must become social advocates–they must assure that the program, the joint development or multiple use of airspace they advocate for public acceptance of their product, can be achieved and take the steps to achieve it. Otherwise, their proposals will always just be pictures and brochures–and their freeways will just be lines on the map.

In California, we are just beginning to develop our program. It is a long way from achievement—but highway engineers and planners are now in the housing and community development business to assure the success of our program and the acceptance of our product.

DISCUSSION

Lowell Bridwell

I think it might be useful if Mr. Hill would add just a little bit of information and describe, first, the community reaction to the house that was rehabilitated on the corner and occupied as part of the program, and second, the community reaction to the pre-fab house that was brought into Watts.

Stuart Hill

This is a very interesting point that Mr. Bridwell brings out. There is a lot of vandalism in Watts, like any other community, and broken windows. A house becomes deserted and the windows are broken, walls kicked out, and so forth. But after you become familiar with the community you begin to realize that the vandalism is directed toward things that are not respected in the community, contribute nothing to the community, or more or less emphasize the condition of the people that live there.

Litton Savings and Loan moved a house into Watts just about the same time we were talking about our proposal. It was a house acquired from a freeway, and they had repossessed a lot and set the house down, rehabilitated it, painted it, and offered it for sale. It had plate glass windows in it, a sliding glass door in the back and was exposed on the corner to everyone on what is really kind of a rough corner because children from several schools converge on it. Everybody expected that if it remained vacant for very long the windows would be broken and the walls torn down. The house is still standing, the windows are not broken; it is a positive contribution to the community and is recognized as such.

If the county or the city were to go in and put up vest-pocket parks, all the iron for the swings, slides, and so forth would disappear overnight and be sold. But the parks that the kids put up, and help maintain themselves—that are part of their community—the swing sets, slides, and everything else stays there. Interestingly enough, just recently somebody put up a pre-fab house in Watts. It was put up in about four hours or so, some record. About two weeks later, the house was gone. Somebody took it away overnight.

Chicago's Crosstown Expressway: Mod-Highway for Urban America

MILTON PIKARSKY, Commissioner of Public Works, City of Chicago

Can we have modern expressway transportation in the city—the kind we all need for jobs, business, shopping—without tearing up the city to put it there, and without displacing great numbers of residents and local enterprises? Can we weave it into the city, so that it does not divide neighborhoods and separate neighbor from neighbor? Can we make the expressway a neighborhood asset, a linear community center that provides community facilities, stimulates community improvement, increases property values?

These are the questions that seriously concern designers and builders of urban highways today. They are the questions we are going to have to be able to answer "yes" to.

Can it be done?

We think it can, and we think Chicago is showing the way. The planning of the Chicago Crosstown Expressway, which is going on right now, is one of the first attempts in America to answer positively the questions I have raised. And the first result of that effort—the plan for the Stevenson-Midway segment running from the Stevenson Expressway south past Midway Airport—offers some very promising answers.

ORIGINS OF THE CROSSTOWN

A circumferential boulevard of monumental scale for Chicago was first envisioned in the broad concepts of the renowned Burnham Plan of 1909. One of its purposes was "... to divert from the center, traffic not having its objective point in the central area." Since then, a circumferential roadway has been an integral part of all the plans of Chicago.

At present, Chicago's transportation network contains a series of radial routes that converge slightly to the west of the central business district (Fig. 1). The proposed highway, which in recent years has been termed the Crosstown Expressway, would run north and south at the edge of the city, connecting the various arms of the existing network and easing the demand on these radial routes. The Chicago Area Transportation Study of 1962 recommended that the location of the Crosstown Expressway be fixed in the general region of Cicero Avenue, and in 1964 this routing was incorporated into the basic policies statement of the official Comprehensive Plan of Chicago.

A more definitive analysis of the needs and character of the Crosstown Expressway was completed in 1966, when a transportation advisory group composed of representatives of the State of Illinois, the County of Cook, and the City of Chicago prepared a pioneering study of various locations and designs for the expressway, giving special emphasis to non-traffic considerations and exploring new possibilities for improving relocation and land planning associated with its concepts. This interagency team demonstrated the desirability of comprehensive planning for highways.

The general location for the Crosstown was selected through study of traffic congestion on arterial streets in the area, daily trip computation to determine the traffic-attracting power of the Chicago Loop, and a survey of existing roadway facilities. Once the need for a corridor across town was established, optimum spacing criteria were applied to establish specific alternatives of corridor location.

The Cicero Avenue corridor was clearly in the area of greatest street deficiency. Cicero was equidistant between the hub of the radial expressway routes and the Illinois Tollway bypass route in the western environs of the city. Because of its location, an

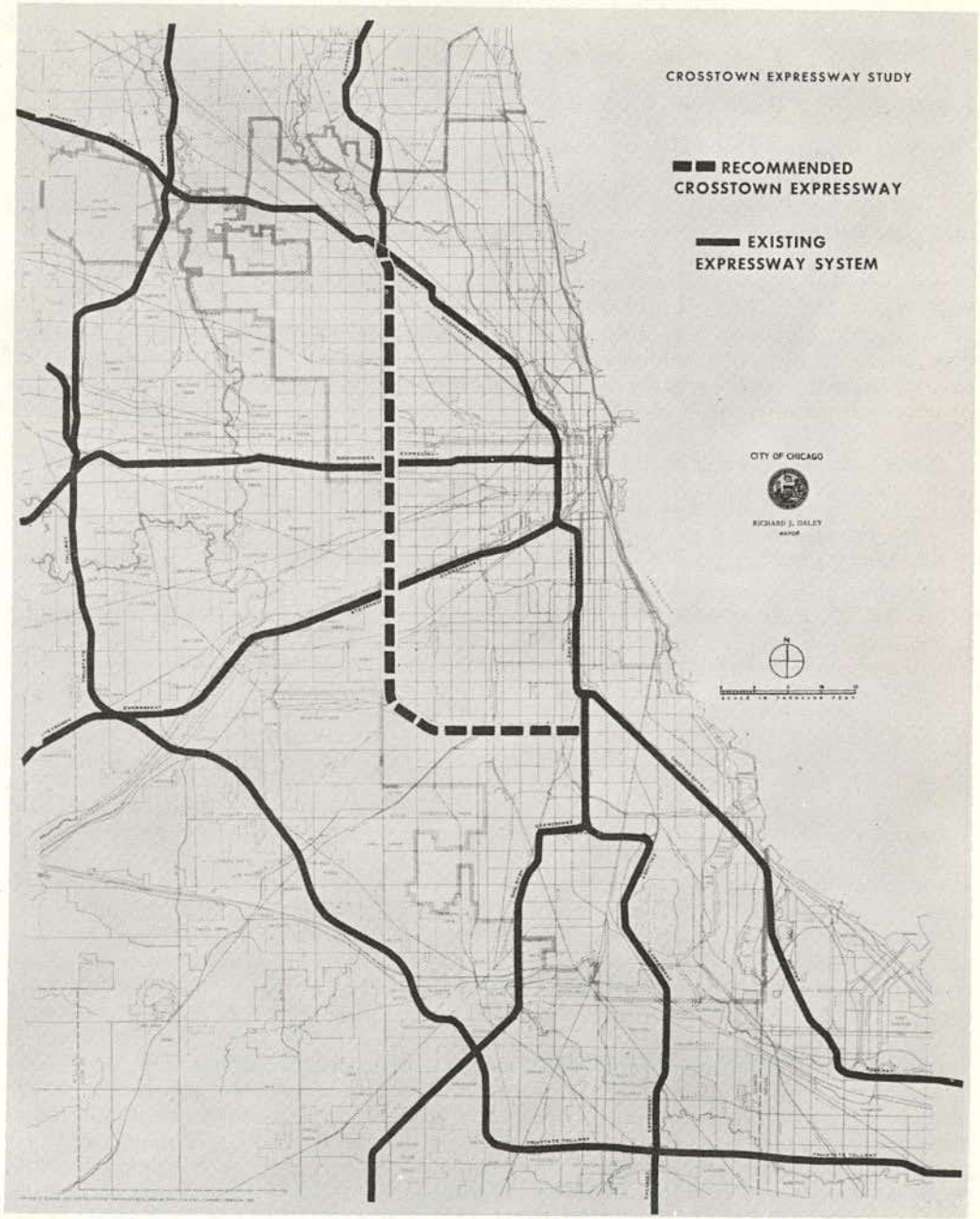

Figure 1. Crosstown route and existing radials.

expressway in this corridor could connect directly to the Edens Expressway in the vicinity of the existing Edens-Kennedy expressway junction near the northwest boundary of Chicago.

It would also prove a direct connection between O'Hare and Midway, the city's two principal airports. The Cicero Avenue corridor clearly emerged as the priority area for detailed alignment investigations.

At present, traffic volumes in the Cicero corridor are heavy, with about 30,000 vehicles a day on Cicero Avenue, 20,000 on Archer Avenue, and 16,000 on 55th, 47th, and 63rd Streets. In addition, local streets are forced to carry heavy employee and truck traffic related to the surrounding industries.

Initial proposals for the Crosstown Expressway were announced during December 1965 and January 1966. At this time, an alignment along the Belt Railway was proposed. This alignment was to be constructed as an 8-lane facility elevated for much of its length on structures built on air rights. Proposals for the alignment served a useful purpose in establishing the general route and in clarifying the urban goals for a detailed alignment with regard to the environment through which it passes. Although not the optimum solution, the alignment selected was a satisfactory proposal and one reflecting Chicago's concern for social and human values. At the time of this recommendation, the Bureau of Public Roads guidelines for joint development (first defined in December 1966 by F. C. Turner in "A Concept for the Joint Development of Freeways and Other Urban Facilities") were not available to the Crosstown study team. Because of the serious concern of Chicago and other urban centers for the consequences of existing Bureau of Public Roads design and land acquisition policies, the Bureau issued its joint development proposals and recommended a restudy of the Crosstown Expressway. New studies were essential to determine how joint development concepts could be specifically applied to the proposed alignment.

THE CORRIDOR CONCEPT

Providing an expressway for this corridor—any kind of expressway—would be an improvement. It would reduce the peak-hour expressway traffic jams downtown and it would reduce, by as much as 50 percent, the traffic burden on Cicero Avenue and on other major west side streets—streets that otherwise would continue to show increases in traffic load every year.

In Chicago, our philosophy requires the Crosstown Expressway to serve another function, namely, to be a community facility and a backbone for community improvement. We shall concentrate on that purpose of the Crosstown in reviewing the plan for the Stevenson-Midway section.

To start with, the following criteria or ground rules were established:

- —Minimum disruption of communities;
- —Minimum displacement of homes and other structures;
- —Accommodation within their own community of all displaced families, stores, and industries who chose to stay;
- —Adequate compensation for those who did not choose to stay;
- —Provision of space for mass transit as part of corridor development;
- —Allowance of adequate space for joint development projects; and
- —Provision of a secondary transportation system to integrate the expressway and the surrounding communities.

As a final ground rule, we set up a planning principle to answer the question, "What should an expressway be to a community, anyway?" We decided to initiate the Chicago Comprehensive Plan's proposal to concentrate Chicago's growth along "corridors of high accessibility".

In too many cases in Chicago, commerce, industry, and residences are all intertwined, as shown in Figure 2a. This results in confusion, traffic, noise, and even danger, with trucks cruising through residential blocks and school children having to cross heavy-traffic streets.

The corridor concept shown in Figure 2b proposes that we equip a few main transportation routes with a full range of transportation options, then concentrate our high-traffic activities along them: shopping centers, industrial parks, high-rise apartment projects, and community centers. This is not only more convenient for these activities; it also means less traffic, less noise, less danger in the blocks of single-family homes and low-rise apartments away from the corridor. At the same time, the corridor can become a new kind of main street for those residential areas.

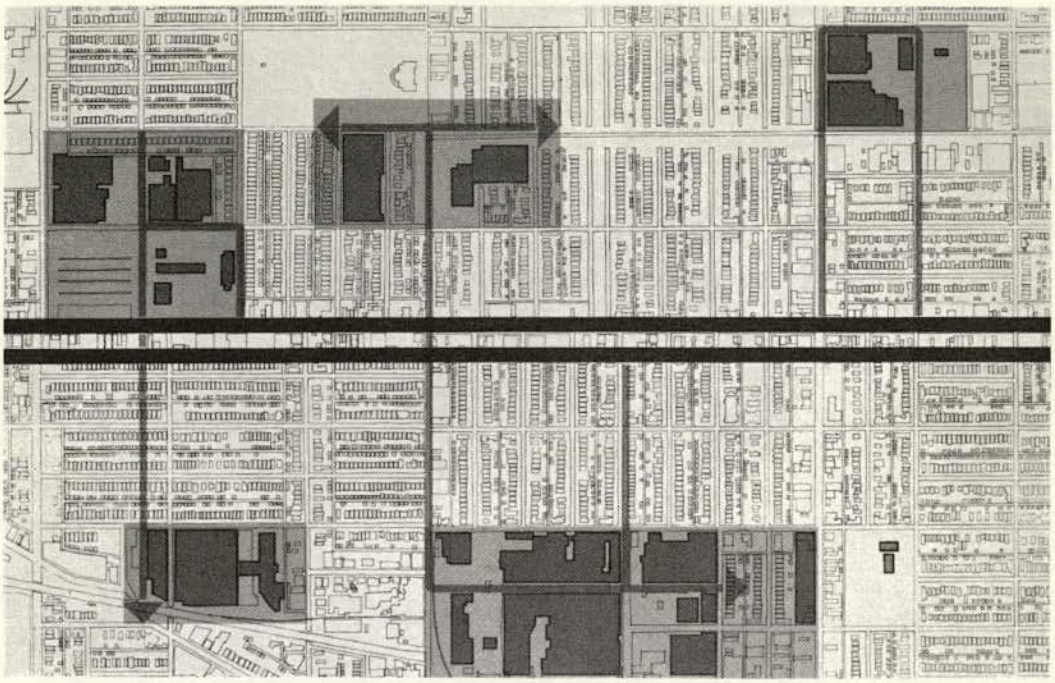

Figure 2a. Disruptive land use.

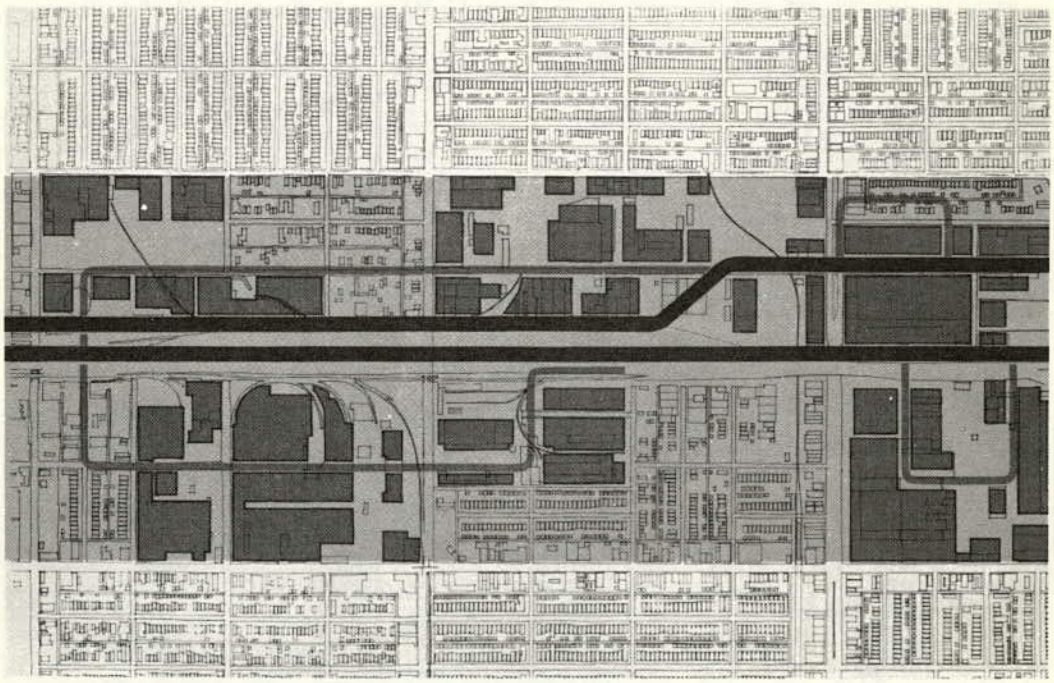

Figure 2b. The corridor concept.

SELECTING THE ALIGNMENT

To satisfy all the ground rules established actually required two plans: (a) an alignment plan that was a layout of the actual expressway, and (b) a development plan that suggested ways of using the new highway as a basis for community improvements.

Three viewpoints, or categories, constituted the framework of our study. Each of the three had its own set of objectives and criteria, and each was treated separately in analysis. While relative values or weights were given to the individual criteria within each of the three categories, alignments were rated with respect to each category separately. Thus, if one alignment emerged as the best in all three categories, it obviously would be the best solution.

The category of engineering aspects included all technical and economic requirements of the expressway facility itself in its primary purpose of moving people and goods more safely, rapidly, and efficiently, and in its relation to other transportation facilities.

The category of community impact analyzed community groups on ethnic, religious, and political bases, and considered the number of people and business establishments that would be directly dislocated by the alternative alignments. A survey of demographic and population data investigated such aspects as the displacement of schools, churches, parks, and businesses, and the splitting of communities, school districts, fire districts, and police districts. For the purpose of community analysis, distinctions were made between the highly neighborhood-oriented grocery or drug store and the more sector-oriented businesses, such as the motel or the used-car lot.

The category of potential land use improvements explored opportunities presented by the alternative alignments as a possible catalyst for achieving desirable objectives—a means of linking the community as it is to an image of what it might ideally be. Chicago's basic policy requires that "transportation facilities should be used as positive factors in improving Chicago's communities and in establishing the future form of the city."

Having thus established a framework for the study, these three categories were then related to a process of analysis. Because the study group was to consider all alignment possibilities, the method of analysis had to function as a deductive process of elimination. Three sequential levels of analysis—general, intermediate, and detailed—were decided upon as best able to accomplish this process of elimination.

At the general level of analysis, all proposed alignments in the Crosstown study corridor—and there were several dozen—were considered in the broadest context with respect both to the city as a whole and to the communities involved. Comparative evaluations of each alignment were made. Thus, each of the alternatives was given a rating with respect to the criteria for the engineering aspects category. Concurrently, and in a similar manner, but entirely independently, each of the sociological, economic, and city planning factors was rated in its respective category of impact on existing communities and potential land-use opportunities. Finally, findings were brought together and compared. If we were hoping for a decisive consensus in favor of a single alignment at the general level of analysis, we were disappointed. Six routes received acceptable ratings in all three categories (Fig. 3). The pros and cons of these six might be listed from top to bottom as follows:

1. Combined Alignment
   Pros—Low industrial displacement.
   Cons—High residential displacement; prevents Midway Airport expansion.
2. Belt Line Alignment/Frontage Roads
   Pros—Continuous frontage roads distribute traffic evenly and protect residential neighborhoods.
   Cons—Heavy industrial displacement; high residential displacement.
3. Belt Line Alignment
   Pros—Minimum disruption of existing neighborhoods; least commercial displacement; lowest cost.
   Cons—High residential displacement; little opportunity for joint development projects; no frontage roads.

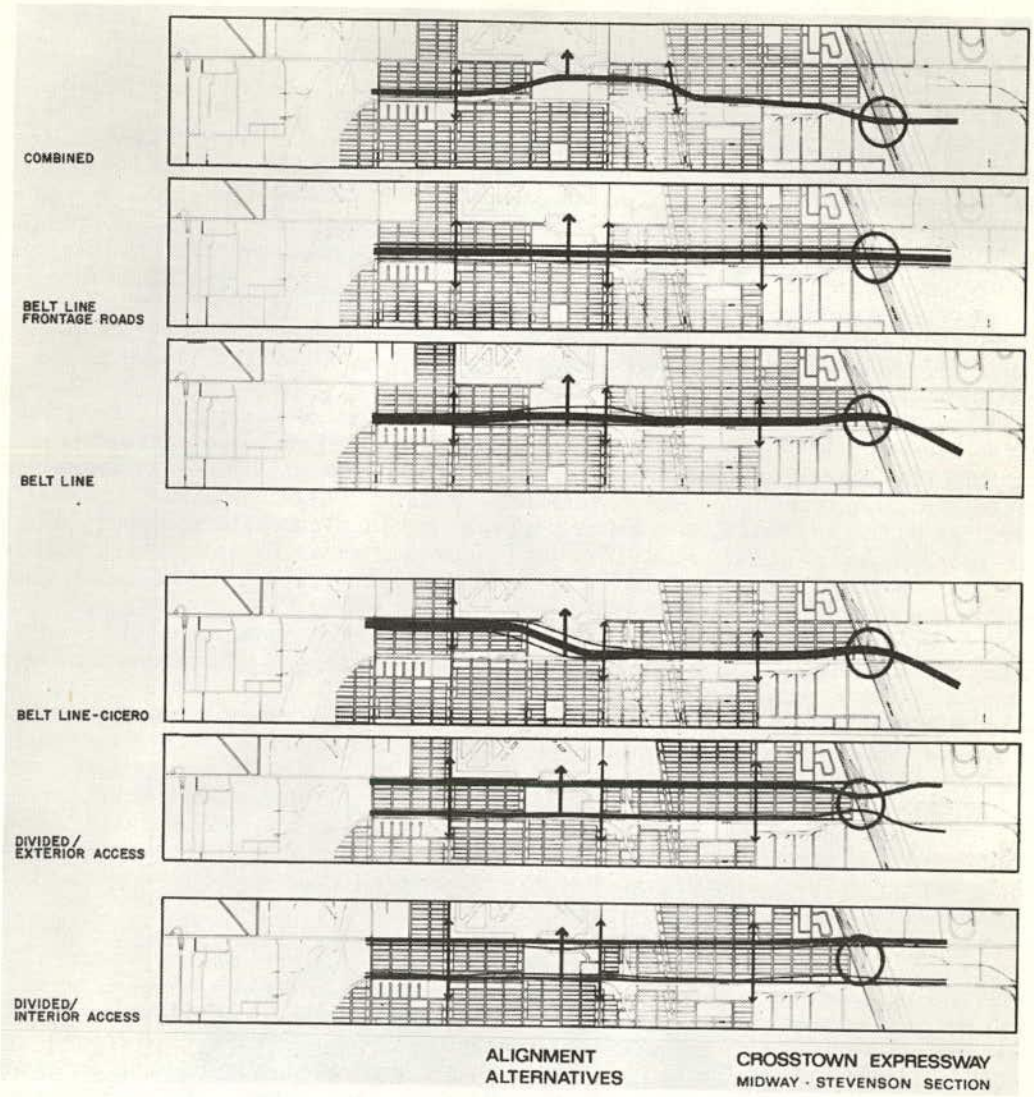

Figure 3. The Stevenson-Midway design: Six alignment alternatives.

4. Belt Line-Cicero Alignment
   Pros—Minimum disruption of existing neighborhoods.
   Cons—Highest residential displacement; little opportunity for joint development projects.
5. Divided Alignment/Exterior Access
   Pros—Low residential displacement; great opportunity for short-range joint development projects; high protection of neighborhoods inside corridor; continuous frontage roads.
   Cons—Less protection of neighborhoods outside corridor; egress from Midway Airport requires use of preferential street interchange system.

6. Divided Alignment/Interior Access
   Pros—Low residential displacement; great opportunity for both long- and short-range joint development projects; continuous frontage roads; highest accessibility.
   Cons—Highest commercial displacement.

In this manner, the study advanced into the second, or intermediate, level of analysis. This level of analysis might be compared with the second power of magnification in a microscope. The field was narrowed to encompass only those alignments surviving the first screening, but these now were to be brought into sharper focus for more detailed analysis. New criteria were introduced in each area of investigation, and some of the criteria examined during the general level of analysis were given more detailed study. Finally, the three independent evaluations again were brought together.

Still there was no decisive result. Three of the six alignments still received acceptable ratings: the Belt Line Alignment, the Belt Line-Cicero Alignment, and Divided Alignment with Interior Access. The Belt Line Alignment would connect at Stevenson Expressway and run south immediately adjacent to the Belt Railway. The Belt Line-Cicero Alignment runs south along the Belt Railway to 55th Street, then bends to the west and, at 60th Street, follows south along Cicero Avenue. The Divided Alignment with Interior Access—also called the "reversed split" alignment—is divided into two one-way roadways. The roadway carrying traffic south starts at Stevenson Expressway and runs south along the Belt Railway; the northbound roadway replaces Cicero Avenue.

At the conclusion of detailed analysis, the evaluation chart showed that all three of these alignments equally satisfied engineering requirements. In the impact on existing communities and the potential land use, however, the reversed split alignment emerged as the clear preference.

The Belt Line Alignment was found to require displacement of some 160 families. In addition, it would permit minimum opportunity for neighborhood improvement. It would have the minimum direct highway cost of the three trial alignments, but only at the expense of minimum community opportunities.

The Belt Line-Cicero Alignment could be integrated into the existing neighborhoods more successfully than the Belt Line Alignment, but not as effectively as the Divided Alignment with Interior Access. In addition, it would displace some 208 families.

THE RECOMMENDED ALIGNMENT

The Divided Alignment with Interior Access—the "reversed split" alignment—was the one recommended (Fig. 4). It satisfied the ground rules. It provided a high-accessibility corridor. It displaced only 69 dwellings in $3\frac{1}{2}$ miles—and proposals were made to relocate those families, houses and all, on nearby vacant lots. And it protected and enhanced the existing residential areas both within and adjacent to the expressway corridor.

The wavy lines at the top and bottom in Figure 5 represent this buffering effect in which the depressed roadways insulate the surrounding community from the impact of traffic on the interior frontage roads. Or, as indicated at the left of the diagram, similar protection can be provided residential areas within the inter-roadway island by means of landscaping and limited access between the frontage roads and residential streets.

The reversed split alignment was also able to make maximum use of existing rights of way and adjacent underused land. Figure 6, for example, is a view of the Belt Line Railway with its fringe of largely vacant industrial land. Figure 7 is the same view as proposed, showing the railroad, one leg of the divided alignment, and adjacent park development.

Similarly, present-day Cicero Avenue, flanked by underused commercial strips, is used to accommodate a community play area, rapid transit line, expressway leg, and frontage road.

Figure 8 illustrates another advantage of the split alignment. As most people know, it is easier to cross two creeks than one river. The split alignment made bridging much easier, and for the first time air rights development over an expressway became

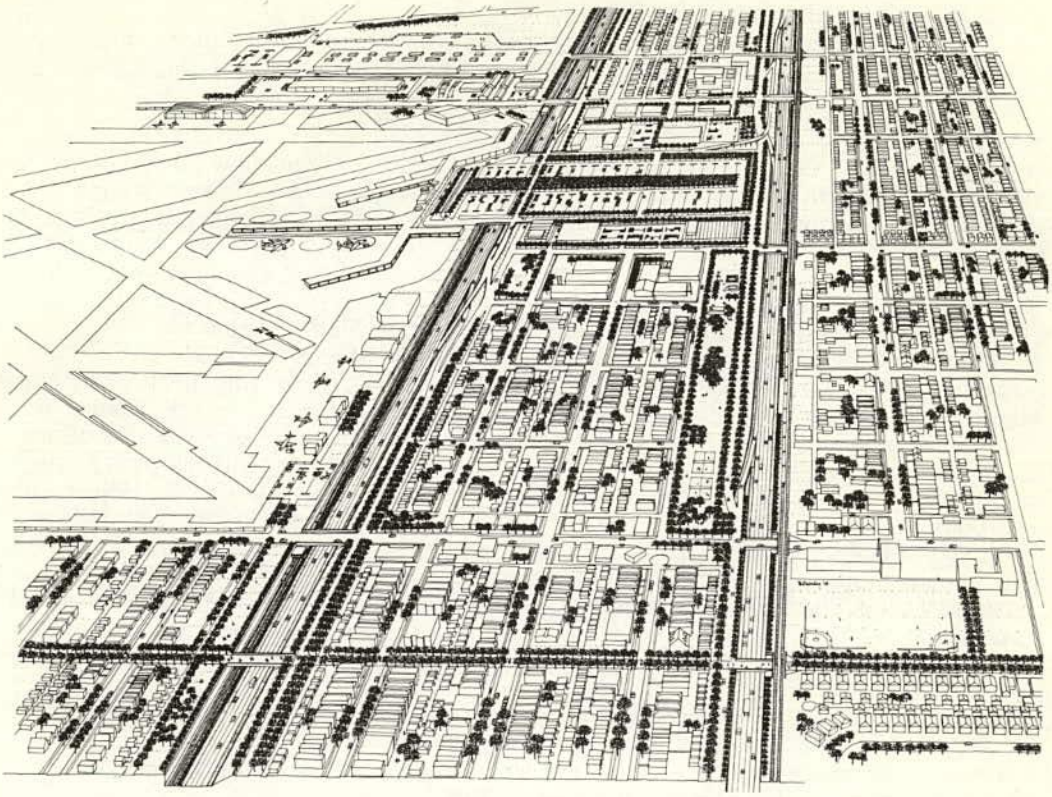

Figure 4. Artist's view of the Stevenson-Midway design.

really feasible. To put an air rights structure over a conventional expressway 300 feet wide is quite a project; but air rights construction over the 100-foot channels of the Stevenson-Midway alignment is not only practical—it is probable.

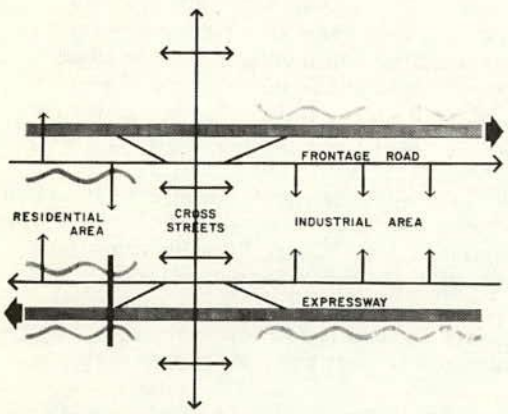

Figure 5. Buffering effect of the Stevenson-Midway design.

THE COMMUNITY DEVELOPMENT PLAN

The community development plan, shown in outline in Figure 9, went beyond the expressway to propose 18 different projects for street improvement, new shopping centers, and other community facilities in a 2-mile width of city between Central Avenue on the west and Pulaski Road on the east.

Why? Because an expressway has an impact on the adjacent community, and it should, therefore, at the same time provide new opportunities for improving the quality of the environment for the residents and workers in the area.

One effect of an expressway is that traffic is reduced on parallel streets but increased on major cross streets leading to and from the highway. So, the community

Figure 6. The Belt Line corridor at present.

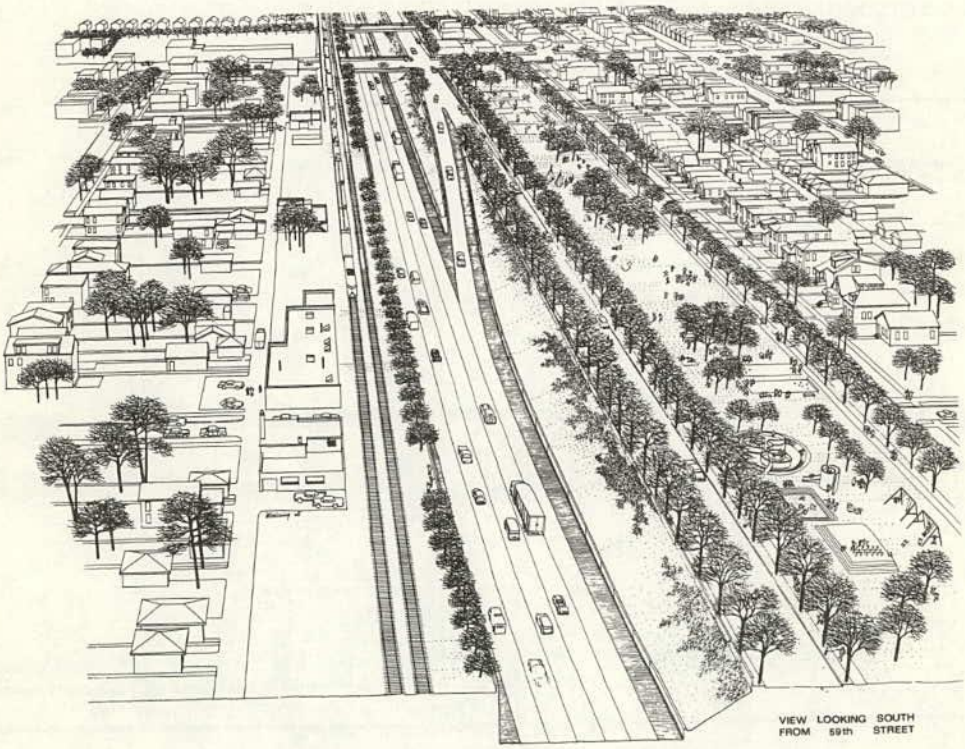

Figure 7. The Belt Line roadway as proposed.

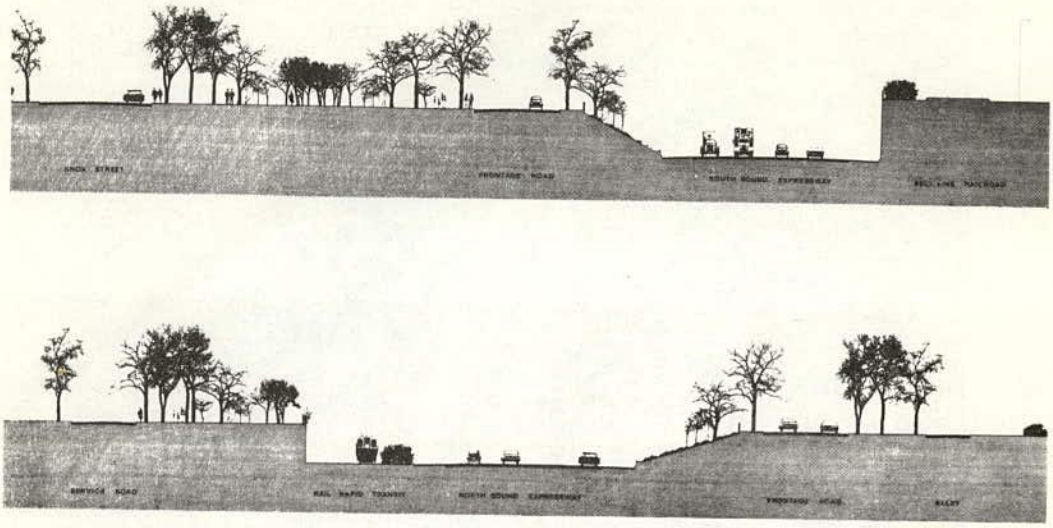

Figure 8. Cross section of the divided alignment: (above) East roadway; (below) West roadway.

plan proposed widening of those cross streets. It also proposed a whole new circulation scheme, with local streets protected from heavy traffic and with a pedestrian walkway system connecting shopping centers, parks, playgrounds, schools, and the expressway edge. The expressway edge, incidentally, should be worth walking to. It will be like the low bluff along a stream, this time a stream of traffic; and it will be a point of interest, a place to meet, even a playground or park.

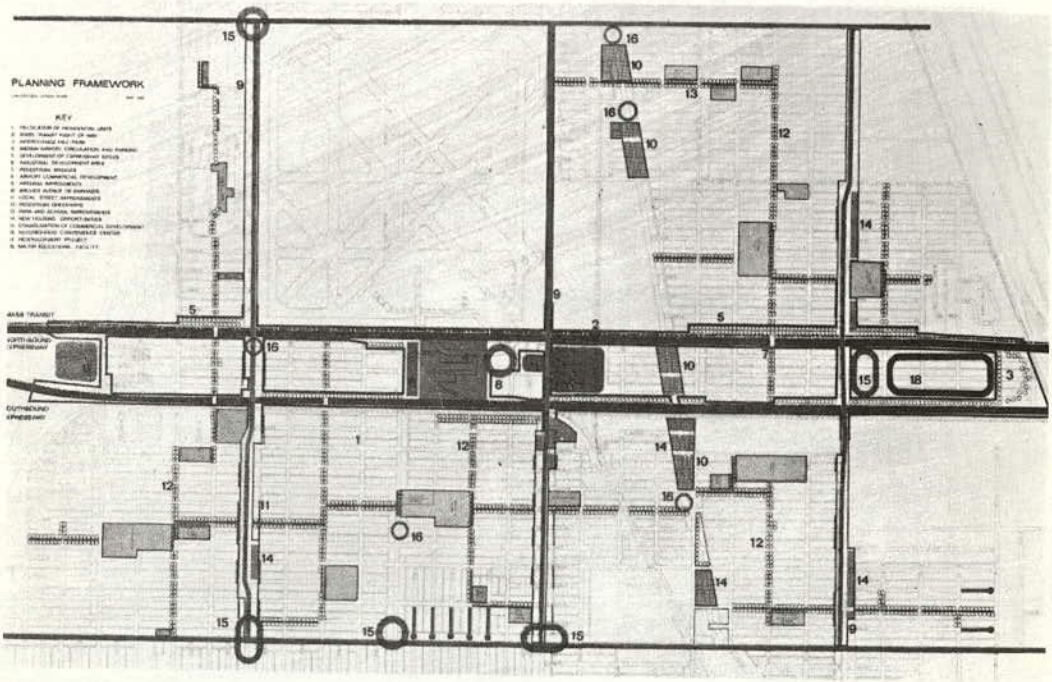

Figure 9. The community development plan: Stevenson-Midway section.

Parks, in fact, are one of the great needs of the Stevenson-Midway area, and the Crosstown project can provide them through joint development. The split alignment was especially strong in joint development opportunities; 48 acres of land would be acquired for parks and green spaces.

At the north end of the expressway segment, where it will interchange with the Stevenson, a hill-park was one of the proposals (Fig. 10). It could be made of earth removed in building the highway, and the savings in earth hauling would probably pay for it. In winter, it would provide a sled and toboggan slide half again as high as the highest one now available in the Chicago area.

Among other projects, a new parking lot would be provided for Midway Airport, and it would run on an air rights structure across the highway right to the terminal. Nearby would be a small industrial park and a small shopping center, both for airport-oriented activities.

North of 47th Street would be a major shopping center, and along with other proposed centers, it would give the Stevenson-Midway area modern shopping facilities in place of the old Cicero Avenue strip. At the foot of the proposed hill-park mentioned is land for a proposed educational center that the Board of Education is studying.

To sum up the proposals in the Stevenson-Midway plan:

—A modern, fast transportation system will be provided for the area, thereby materially reducing through traffic on local streets.
—This will be done with minimum dislocation of families, without exiling anyone, and without cutting a canyon through the community.
—Above the expressway and within its two paths will be a corridor that can become a center of community activities. This corridor will have easy access to the expressway without being strangled by through traffic.

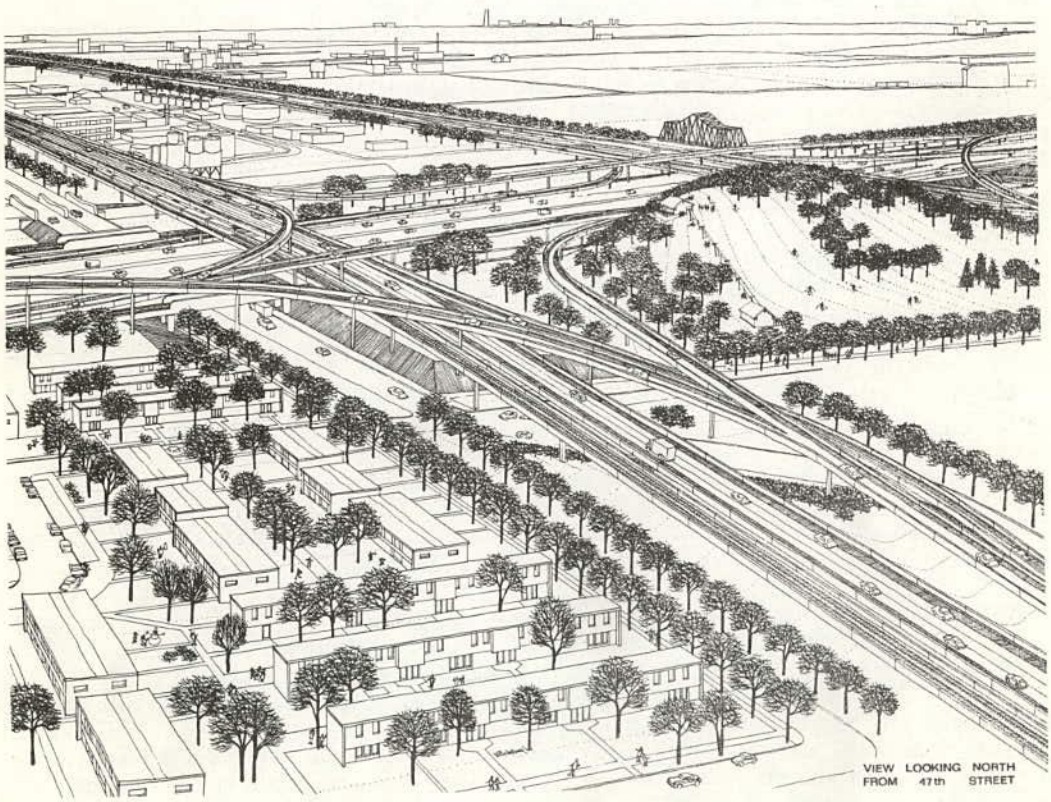

Figure 10. Proposed recreation hill.

—Much-needed parks and recreation spaces will be provided, and with them a new local street system that will provide access to the expressway and peace and quiet on residential streets—both at the same time.

THE DESIGN TEAM

In the Stevenson-Midway design we see an expressway that is a real asset to the community it traverses, offering great opportunities for continuous community improvement. To achieve it, it was necessary that the responsible agencies develop a whole new method and organization of highway design, one that would include the range of skills needed in community planning, as well as highway design—in brief, a systems approach.

Two interdisciplinary groups are involved. An interagency group, which includes city, county, state, and federal planning and transportation agencies, is responsible for coordinating the project and ensuring consideration in it of all urban development interests. This group is served by an interdisciplinary design staff. The combined staffs include engineers, architects, landscape architects, urban designers, city planners, lawyers, sociologists, right-of-way specialists, marketing analysts, traffic analysts, and other transportation specialists.

We have mobilized and coordinated these professional disciplines systematically from the following cooperating organizations: U. S. Department of Transportation, Federal Highway Administration, Illinois Division of Highways, Cook County Highway Department, The City of Chicago's Department of Development and Planning, Department of Public Works, Department of Streets and Sanitation, Department of Urban Renewal, Department of Water and Sewers, Mayor's Committee for Economic and Cultural Development, Chicago Transit Authority, Chicago Area Transportation Study, Northeastern Illinois Planning Commission, and Crosstown Associates, a joint venture of Skidmore, Owings and Merrill, C. F. Murphy Associates, Howard, Needles, Tammen and Bergendoff, and Westenhoff and Novick, Inc.

In addition, the following agencies contributed ideas and suggestions, as well as reviews, of several aspects of the Crosstown Expressway study: Chicago Board of Junior College District No. 508, Chicago Board of Education, Chicago Park District, Chicago Housing Authority, Chicago Dwellings Association, U. S. Department of Housing and Urban Development, and U. S. Department of Transportation, Federal Aviation Administration.

CONSULTING THE COMMUNITY

We gave our combined staff full freedom to try new ideas, asking only that they justify everything in detail, and that they know the communities they were serving.

Response to the Stevenson-Midway plan at public hearings indicated that the designers did do their homework and did know their community—and in fact our public hearing process put them to a very thorough test.

We began with a presentation in the mayor's office to civic, business, and professional organizations. This presentation was thoroughly chronicled by the communications media.

A few days later public meetings were held, on two successive evenings, at an elementary school in the Stevenson-Midway community. The alignment was explained in detail and the related joint development opportunities for the area were also described. These heavily attended meetings lasted until all persons desiring to discuss the project with project personnel had posed all their questions.

During the following week, from noon to 9 p. m., project material was on display in concourses A and B at Midway Airport. Arrangements were made to allow free parking for all visitors to the exhibit. Staff members were continuously on duty to answer questions. (After the hearings, the display was transferred to the Ford City Shopping center where it was shown for many additional weeks.)

Next, a meeting was held in the Stevenson-Midway area, at which each property owner and tenant who would be affected by the expressway was told of the relocation opportunities and procedures. This meeting's purpose was primarily to reassure prop-

erty owners and tenants that no precipitous action would be taken, and that everyone would be dealt with in a fair and equitable fashion.

The official public hearing for the Midway-Stevenson section of the Crosstown Expressway was held two days later. The Midway-Stevenson section was again explained in detail, and all persons in attendance were given an opportunity to express their opinions.

In summary, we discussed the plan at a series of local open meetings attended by some 2,000 residents. We displayed a model that was viewed by more than 300,000 people. We asked for questions and suggestions, and we got hundreds. We have answered more than 300 written queries and comments. Some of the suggestions were, in fact, very good and were adopted. But nowhere, to my knowledge, did people object to what we were trying to do or to our basic plans for doing it. These they liked.

THE NEW RELOCATION PROVISIONS

I shall conclude by highlighting some developments since the Stevenson-Midway study plan, beginning with one development at the federal level that will have an important impact on the Crosstown. I refer to the relocation provision of the Highway Act of 1968—particularly the provision for paying owner-occupants of single- or two-family residences up to $5,000 beyond the acquisition payment where that payment is insufficient for purchasing a dwelling comparable to the one displaced. This, and the provision for paying tenants up to $1,500 over a two-year period when a dwelling unit comparable to the one displaced has a higher rental, and other important relocation provisions in the 1968 law were enacted after the Stevenson-Midway plan was proposed and after we had conferred with the families to be relocated. Fortunately—and thanks to efforts by Chicago and other urban centers—the Act comes in time to be of service to these families and to be used in the implementation of the Crosstown as a whole. Other improvements in relocation allowances and procedures we are pressing for in the proposed Uniform Relocation Bill of 1969 will help still more.

THE CROSSTOWN DESIGN PROCESS

Within the Crosstown design project itself, we are at work now on study plans for each of the three remaining expressway sections. Having completed a preliminary route location study for the Stevenson-Midway section, the east-west leg between Midway Airport and the Dan Ryan Expressway will be the next to be completed. We will hold public hearings like those for the Stevenson-Midway section for this and each of the remaining study plans in turn.

We are preparing preliminary engineering plans and profiles, plus type, size, and location plans for landscaping, utilities, drainage, signs, lighting, retaining walls, and bridges. Included will be specific joint development project designs and feasibility analyses, as well as specific plans for relocation of each displaced household, business, or industry.

The preliminary design concept plans for the Stevenson-Midway section are now well under way. We will conclude the entire Crosstown Expressway planning phase with two general studies: (a) an implementation study that identifies legislative and public policy changes needed in implementing the Crosstown design, and (b) a project summation in which the design process is traced, analyzed, and evaluated as a guide to future projects.

CROSSTOWN DESIGN ELEMENTS

A third general study is also well under way. It will result in a manual of design criteria and graphic design standards appropriately termed "Highway Design Elements". Actually, the design elements will evolve as we move along in the concept stages of our project. Details will be added that are not yet determined. But the general direction of thinking can be indicated—keeping in mind that many final decisions are yet to be made:

1. We are considering a 70-mph design speed for the Crosstown. This, of course, involves us in design improvements all along the line—in entrance and exit control, in

lighting, in signing, in careful attention to geometric design details. We are studying, for example, major interchange lane balancing to improve operations at the ramp terminals. By careful attention to design detail, we expect to achieve increases in safety and capacity.

2. We are making traffic assignments on a peak-hour basis instead of the daily basis we have used in the past. This fixes design attention on a critical problem for city expressways, one which tends to be hidden when peak-hour percentages are applied to a daily forecast.

3. We have made a very careful study of visual design in which a closely coordinated team of structural engineers, architects, and estimators took part. Some of the early results of this study, in which visual design standards were developed and expressed in a model backed by prototype detail drawings, are highlighted next.

VISUAL DESIGN STANDARDS

Uniformity was one principle: Design a fine structure and stay with it. We are considering both steel and concrete, but will avoid arbitrary shifts from one material to the other. One reason for this is that decoration can be distraction at high speeds.

Openness was a related principle. We are proposing that bridges span the whole width of expressway to maintain an open feeling and avoid driver sight blockage. Using the split alignment, this can be done with spans of 150 feet or less.

Continuous use of the General Motors type barrier as a highway edge and separator is another design feature, and the barriers are also designed to protect ground cover from salt spray.

Concrete parapets will turn the corner and cross a bridge to avoid the mixture of fencing types found along many expressways. We are also considering a 6-foot mesh fence above bridge parapets to prevent littering onto the expressway. And while we have not yet developed our signing system, we are already giving careful attention to sign structures.

For foot bridges, we are proposing a low rise-to-tread ratio of four to one, so it will be possible to push a bicycle up the stairs, or even a baby carriage. Hence the easy double flights shown in Figure 11, instead of the usual steep stairs combined with ramps.

Lighting was another concern, and light standards were designed to be simple in form. At the same time, we have worked closely with major lighting manufacturers to develop a mainline lighting system that will aim forward and be glare-free. The split alignment, of course, helps us in this.

Landscaping is a vital design element to soften the severe lines of the expressway. Therefore, as shown in Figure 12, we are proposing vines along retaining walls, trees above retaining walls, and ground cover on slopes, rather than concrete. Landscaping, of course, is at least as important for urban communities along the expressway as it is for the motorist.

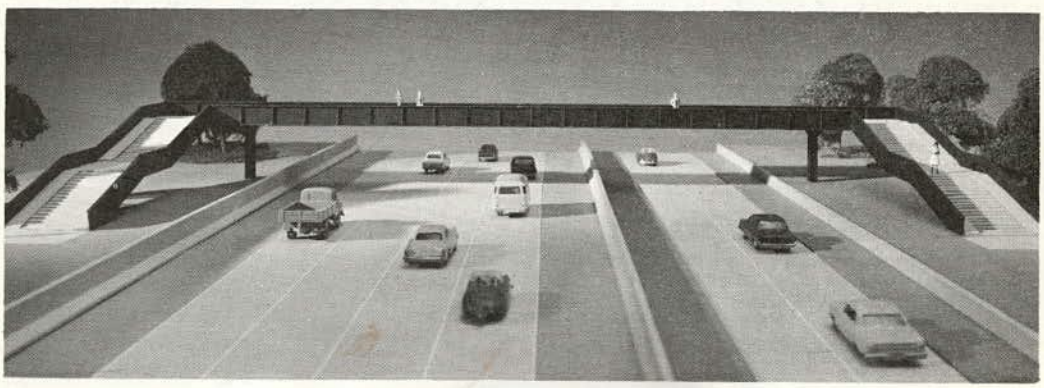

Figure 11. Standard design model of foot bridge.

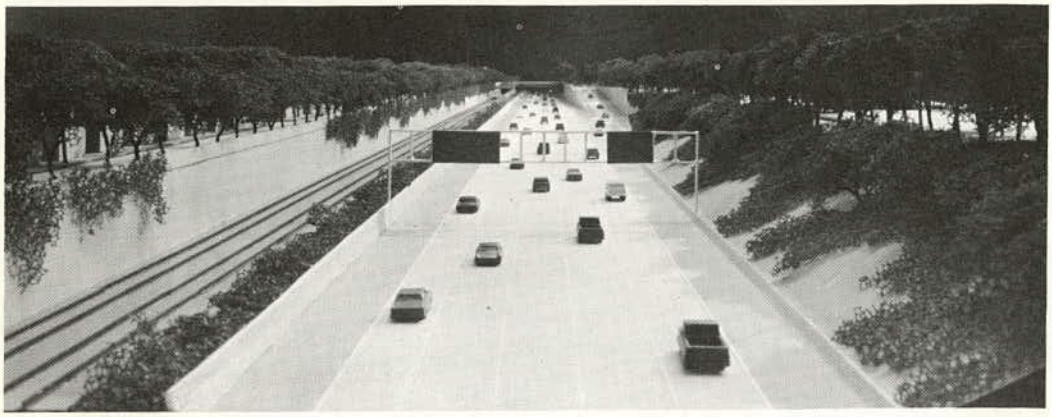

Figure 12. Standard design model of bridge and retaining walls.

In even a sketchy survey of these provisional design standards, one fact stands out above the others: There is no conflict between good aesthetics and good engineering design. The two reinforce one another. Visual standards can be grounded in construction and operational needs, and when they are they can mean better performance and fewer distractions and obstructions for the driver, while permitting economies in materials and construction. Visual standards are also one of the principal means of really knitting an alignment into the urban community, as a positive community asset.

Criteria and standards will not, of course, produce carbon copies of the Stevenson-Midway plan, because this is not formula planning; this is planning to meet particular community needs, and communities differ. But all of our plans, criteria, and standards are based on the same questions the Stevenson-Midway plan started with, and we predict the same general answer will emerge: We can have urban expressways that respect the city and its neighborhoods and positively benefit those neighborhoods. We will use the Crosstown Expressway as a tool to enhance the quality of the environment through which it passes.

It should not be overlooked that Chicago's proposed Crosstown Expressway, which is being planned with due recognition of the social, economic, and cultural needs of a densely populated urban area, will cost more highway dollars than an expressway planned without regard for these matters. Also apparent, however, is the fact that planning solutions for urban problems have entered a new era and that all public works projects must both restore and improve urban communities.

It is equally true that highway agencies alone cannot be expected to carry the entire burden in solving the physical problems of the city. The pressures for urban land, the intensity of city development, and pressing social problems require that all urban changes be planned and programmed comprehensively and with intricate coordination among all aspects of urban life. Successful preservation and improvement of our nation's cities requires a partnership composed of governmental agencies and the private sectors of our metropolitan areas.

Community Values and Operations Research

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If there is any characteristic that can be singled out as the distinctive phenomenon of our twentieth century it must be the rapid growth in the complexity of organizations and their decision processes. Errors in making decisions can be extremely costly in both human and material resources. Indeed, the long life of many capital investments means that the results of some errors may be, for all intents and purposes, irreversible.

Certainly the decision problems involved in urban transportation and land-use planning are among the most difficult and complicated decisions we can make. We face the question, "What will be the impact of a certain transportation system on the way of life in a community?" Even to define what is meant by the phrases "transportation system" and "community" is extremely difficult. How do we establish limits on such a question? How do we choose between those factors we wish to consider and those we feel irrelevant? How do we validate or even test our assumptions about what is relevant and what is not?

Community opposition to transportation plans has made it obvious to the transportation planners that "transportation" is no longer a well-defined field of interest. The construction of the Interstate Highway System through our countryside is not an adequate prototype for the construction of freeways and mass transit lines through our cities and suburbs. In the urban setting, the transportation planner faces problems of land use, relocation of housing and business establishments, recreation planning, economic development, and the proper integration of the area immediately affected with those contiguous to it. He must consider the differences between long, short, and intermediate term effects of his planning decisions. All of these considerations and many others must be considered as a package, rather than as distinct and more or less unrelated elements of the plan.

The need for establishing sound and systematic decision processes that can handle a large number of variables often interrelated in intricate ways gave rise to operations research, which applied the methods of the physical and mathematical sciences—and more recently, of the social sciences—to the solution of organizational decision problems. To deal successfully with a decision problem, it must be formulated or modeled. Next, the model must be solved in such a way that the decision is optimized against some set of objectives, and third, the solution must be implemented and controlled. Let us start by considering problem formulation.

VALUES IN DECISION PROBLEMS

Values enter directly into the process of problem formulation. As the decision process is modeled, the value structure of the organization is directly reflected in the model itself, where it is explicitly observable. Effective operations research (OR) requires that the OR study team include the participation of individuals within the organization, since the primary task of the team and of the sponsoring organization is to insure that values are correctly embedded in the model. This raises the interesting question of whose values should be incorporated in the objective function used in the model. In community studies it is community values that should be used, but what is the community? How are divergent elements in the community represented by the objective function? Is the OR team's approximation of community values sufficient or should the "decision-maker's" value structure be used? Indeed, the most difficult aspect of most decision problems is the construction of the objective function that is to be optimized.

Given the nature of the decision, various courses of action are developed that represent alternative ways of dealing with the problem at hand. The inventiveness and the

creativeness of the OR team and the sponsoring organization are the only real limit to the form and extent of the alternatives. Indeed, the development of alternative courses of action can be one of the most valuable and innovative facets of the use of operations research. It is in this phase of the project that policy content is developed (1).

Specifically, the function to be optimized must contain a set of measurable objectives and a set of weights that scale the individual objectives by relative importance. The mathematical form of the function aggregates the weighted individual objectives into a single number, which measures the contribution to the relative effectiveness of each of the objectives. The criterion function can be constrained to insure that the individual objectives represented in the function take on values that lie within some acceptable range. It is through the objective function that community values enter into the operations research models, as each of the alternatives is appraised by evaluating it in terms of the objective function.

The exact way in which each value is included in the decision model depends on the way in which that value is defined and on its measurability (2). The various elements of a community value system are not generally revealed overtly unless someone violates or threatens to violate the values held by the community. Clearly, it is revealed values that we must measure and include in our models. We must remember that the strength of these values will vary over time, and that their strength is usually inversely related to the degree to which the community feels that the value is threatened (3). We must remember that these revealed values are unique to the specific time and place, the specific communities involved, and the specific public investment program under consideration. While there may be basic similarities of response to transportation plans made in different communities, the exact nature and strength of the response must be viewed as an ad hoc phenomenon. If a set of values is fairly well defined, measurable, and independent, the values may be aggregated by simple addition, properly weighted, of course. Many, if not most, of the models concerned with public investments are of this type, include cost-benefit models and most of the transportation-land value models that incorporate econometric methods for determination of weighting factors or coefficients.

For example, Wingo's model of transportation cost (4) and, for that matter, most of the other similar models, including the works of Alonso and Haig (5, 6), take a set of undefined community values and develop from them a set of economic costs. Values enter such models indirectly as elements that describe cost as a function of distance, time, or frequency of trips between the center of the city and various points away from the center.

All of this sounds quite straightforward, but one is reminded of Artemus Ward's remark, "It ain't the things we don't know that hurts us, it's the things we do know that ain't so." Models that focus solely on cost contain within them the assumption that the relationships between costs and community values do, in fact, behave as the arithmetic of the model implies. Second, there is the implied assumption that other things are either invariant or similarly affected as the variables of the model take on different values, Either or both of these assumptions may be in error. For instance, Deroudille's work casts considerable doubt on the seemingly obvious notion that residential land values decrease as the time and distance between the land and the center of the city increases (7). Quite possibly, the usual hypothesis about time-distance-cost is true, but there are other factors that more than offset the distance-cost factor. Other problems in the application of cost-benefit models are discussed by Lichfield (8).

The distance-cost relationship has the strong advantage of being more or less directly measurable. It can, therefore, be made an element of the objective function. It would be most convenient if all of the elements we wished to include in the objective function could be expressed in a common dimension—and not uncommonly we attempt to force such a happy state by assigning dollar values to everything. We now know, however, that our objective function should contain several elements with very different dimensions—for example, measures of use of a facility, disturbances or distortions in community living and/or travel patterns, changes in the tax base, the number of business establishments forced to relocate, changes in the balance of political power, direct

and indirect employment effects, measures of congestion, and the level of racial and ethnic integration, to mention only a few.

Since the units in which these variables may be measured are quite different, they cannot be simply aggregated. The numbers, however, can be considered as indices of the level of the variable as well as direct measures of it. If we arbitrarily take the indices as dimensionless, and develop a set of weights such that each variable has a weight that represents its importance relative to the other elements in the function, we can now aggregate across the variables. The output of the function will be dimensionless and will represent a relative measure of effectiveness for the system being described. The components of the objective function will be blended together, each receiving its appropriate weight and contributing to the output in accordance with its importance.

There are two general methods for deriving these weights—the "revealed preferences" method suggested by Samuelson (9), and various direct measurements of subjective judgments, employing such techniques as pair-wise comparisons, the Delphi method and others (10, 11, 12, 13, 14). These methods have been successfully used in a number of diverse cases and the act of quantification insures that the weights receive conscious attention (15). Through these weights, the values of the community are employed directly to influence the output of the objective function. It is critical to remember that the weights must be considered dynamic. As community values change, the weights must change so that planning for a future time period can reflect the dynamism of the community.

At times it is not particularly desirable to enter relevant variables directly into the objective function. For example, planners may specify some minimum level of traffic speed or wish to hold congestion below some critical level. In such cases the variable can enter the model in the form of a constraint on the choice of alternatives.

Even in cases where the variable to be included is not so obviously measurable as congestion or speed, it may be included either in the function or as a constraint. Freeway designs, for example, can be differentiated by their aesthetic qualities as well as their routes or engineering. Given a basic design, beauty is partially related to cost. Within limits, the more funds we devote to landscaping, the more pleasing the resultant project is apt to be. If this relationship can be estimated by the planners or by a "fine arts committee" it can be used in the objective function. If the committee is unable to develop the relationship, but can detect three or four different levels of beauty, the project can then be constrained to meet some minimum level of aesthetic acceptability. Above all, important objectives must never be excluded simply because they are difficult to measure. Of what real worth is an analysis when the analyst (16) writes:

> The ugliness of the elevated highways that cut indiscriminantly across cities, the dislocations caused to families whose property is taken for highways, the smog from the increased number of vehicles encouraged to use the highway, and the increased congestion in the central cities...are certainly all additional costs arising from the construction of the Interstate System; however, there is no way to measure or to quantify them. Consequently they must be ignored....

The analyst is suspicious of subjective data and so he seeks varables with dollar-cost or time dimensions because they are directly measurable and seem to be objective. Often they are not nearly so objective as they appear. Time spent in congested traffic patterns at a freeway exit probably does not have the same impact on an individual as an equal number of minutes spent waiting for stoplights on city streets or walking to and from his parked vehicle. There is no particular need or virtue in aggregating all variables in the objective function that happen to have the same dimension. They may have quite different weights or may be subject to different constraints. In such cases, it is helpful to maintain strict separation of such variables.

The process of building the objective function is never truly complete. As the analysis of various plans is undertaken, new factors will occur to the analysts that should

be included in the evaluation since they will be seen to contribute to or detract from the worth of the proposed public investment in the community system. In practice, the limits of the analysis are set by common sense. If variables have an impact so weak that they cannot appreciably affect the outcome or decision, they should be excluded. Further, even though a given variable may have a high level of impact on the outcome, it may not be appreciably variant with the alternatives being considered, and can be excluded. In any case, the objective function is always a partial measure of the value or cost of an alternative since it is neither feasible nor possible to describe any complex real-world system completely.

Once the objective function is constructed, each alternative is evaluated and the best alternative can be selected as the recommended decision. Clearly, the outcomes of the evaluation process are highly dependent on the environment that impinges on each of the alternatives. The environment, therefore, is a description of those things that will affect the value of an alternative but are not under the control of the decision-maker. A given transportation plan will produce different outcomes depending on such uncontrollables as the design of future vehicles, the general growth and development of the area to which the plan is applied, area population growth, and other similar environmental factors.

Since the nature of the future environment is usually not known with certainty, a set of the reasonably probable environments should be developed and each of the alternatives evaluated for each of the states of nature. The results can then be arrayed as a "payoff matrix", which is simply a table of all outcomes. The Delphi method and other techniques for quantifying subjective information can be used to estimate the probability that any of the environments postulated will pertain in the future. With these probabilities, the "expected value" of any of the alternatives can be determined and the "best" alternative selected.

Let us digress for a moment to consider what is really meant by the phase "best alternative". Since we are considering a system that can be only partially described at best, and since it contains a number of elements that are quantifications of subjectively determined information, and since the objective function contains a number of elements that are certainly probabilistic in nature, and are not apt to be nicely behaved mathematically, it is impossible to speak of an optimal solution in the mathematical sense. We seek system improvement through better solutions and more insight into the real nature of the problems we face. We are not at this time able to seek the "best" solution and "perfect" insight into our problems.

The approach to the selection of a transportation plan we are suggesting is through the use of statistical decision theory. It is based on an analysis of the relevant system and is used to compare the expected values and uncertainties involved in serveral alternative solutions to a single transportation problem. The measures developed are relative, not absolute, and so we cannot compare the value of a transportation system with the value of extended social services or exploration of the moon. The courses of action evaluated must be alternative means of achieving the same ends.

Given this basic description of the nature of how values are incorporated in operations research models, let us turn to a consideration of several specific types of models to investigate briefly the uses to which they may be put, their strengths and limitations, and some of the key assumptions underlying them.

OPERATIONS RESEARCH METHODS

Mathematical programming is a class of methods for use in solving resource allocation problems. This method is particularly useful in evaluating the effectiveness of alternative transportation plans in meeting community objectives for different costs of system designs.

In linear programming, we are concerned with optimizing a linear (or proportionate) function of the resources available to several activities, subject to linear constraints expressed in these resource variables. In this method we assume that community values are additive or linear in the resource categories. Accordingly, although linear programming has received a considerable amount of research in developing and

refining techniques for finding solutions, these methods are typically useful in community value problems only as initial approximations.

Nonlinear programming methods have not been completely successful in providing solutions to community value optimization problems in closed form. That is, we are not able to apply available mathematical recipes, which will find optimal solutions to these problems, except in a few special cases. Nevertheless, nearly optimal answers to nonlinear problems can be developed through successive approximations, although the determination of the proper functional forms and estimations of parameter values remain very difficult. Whenever approximations are obtained, sensitivity simulations can be applied that test the effect of errors on solutions and alternative policies.

Dynamic programming has proved to be a very useful technique in those cases where it may be applied. This method is used when the problem can be decomposed into a set of sequential decisions. In general, this method evaluates the consequences of a large set of sequential outcomes and enables us to select the sequence of decisions that provides the optimal final outcome, where any final outcome depends on the decisions and outcomes that preceded it. Time need not be involved in dynamic programming problems, and the method may be useful whenever optimization is required across two or more independent dimensions. For example, in the budget allocation problem undertaken to implement a freeway plan, a dynamic programming formulation was used to allocate resources to reduce the opposition of political pressure groups (14).

Stochastic programming is a useful technique for optimizing certain objective functions where the parameters or constraints are given in probability terms. Generally, closed-form solutions using this method can only be obtained in very special cases of the objective function, but heuristic techniques will find nearly optimal solutions.

Integer programming is a helpful method for selecting projects or systems to best achieve a specified performance criteria. The most useful situation is where the choice variables can take on only a small number of integral values. Particularly in the case of large problems, the selection or evaluation of projects can be solved using this method.

Finally, decomposition methods in large-scale mathematical programming applications are being developed that extend the range of solutions to system design problems. It is necessary to say, however, that the ability of operations research to formulate problems of this type is much greater than our ability to arrive at mathematically optimal solutions. At the same time, it should be emphasized that heuristic methods will give us very good answers—approximately optimal answers that are often far better than those generated by conventional approaches and rules of thumb.

Computer simulation is the most widely used method for testing out alternative proposals for solving transportation problems. Characteristically, we develop a series of mathematical models representing the subsystems of a complex transportation system, using estimates of parameter values. Computer programs are prepared that incorporate the models and simulated data on how the system would perform under varying conditions of demand and use. The results are predictions of the distributions of system characteristics under a variety of conditions.

Some examples of computer simulation are the following:

1. Case performed a simulation study of the Northeast Corridor rail transportation system to determine the number of vehicles and operating schedules for specified demand and levels of service (17). Considerable skill is required to model and program the characteristics of this system.
2. Airport terminal and airline operations have been simulated to find the effect of varying sizes of aircraft on passenger movement and handling. Although individual elements of the system may be modeled, including passenger ticketing, baggage handling, and aircraft arrivals, no comprehensive overall systems model exists (18).
3. Traffic light operations may be simulated, where some initial results may be obtained by applying priority and multi-channel queuing theory (19).
4. Highway traffic may be modeled using differential equations and the physical theory of follower phenomena (20). Systems results for a city may be obtained through the use of a large-scale computer simulation.

Computer simulation is also a powerful tool when applied to problems involving the estimation of costs, values, and weights discussed. Not uncommonly, the transportation planner is faced with the difficult task of developing "trade-offs" among objectives that are conflicting—for example, the objectives of "mobility" and "stability" put forth by Ylvisaker (21). Simulations using different weights for these objectives will quickly expose the implications of various "exchange rates".

Operational gaming is useful in modeling a city's transportation management problems. Recent developments of an urban management game show promise of exploring alternative solutions in simulated real-life situations using people as participants in the exercise. This form of gaming has proved to be very beneficial in both industrial and military areas of application (12).

PROBLEMS AND SOLUTIONS

In modeling community systems, approximations are required so that complex problems may be studied. Usually, a mathematical model is generated that yields a tentative solution as well as an indication of the effect of missing factors on the solution. An iterative procedure is usually performed where, in succeeding stages of the research study, additional factors are incorporated in the models.

The tools of sensitivity analysis are also quite useful in handling complex problems. Sensitivity analysis provides a method of determining what should and what should not be included in the models. Basically, we simply make changes in the parameters one by one and check to see how the output of the model responds to these changes. Not uncommonly, it is found that very large changes in some parameters can be made before the output is appreciably changed. This indicates that the variable or parameter in question need not be carefully controlled, and we can devote our attention to more important matters.

It is also sometimes useful to see just how sensitive our solution is to slight changes in the mathematical form of the model. Clearly, we would perfer to work with arithmetically simple models if we do not distort the problem in our search for computational simplicity. Testing various formulations can often lead to important simplifications, which will increase our capacity to generate answers to variations in the input data.

A major problem affecting the use of community values in projects is the implementation of plans and programs. Usually, it is impossible to simulate full-scale operations in the planning process. Furthermore, in many cases, implementation occurs long after the original plans were prepared and circumstances may mitigate against their adoption. Successful systems studies incorporate the implementation problems in the research phase. In addition, research specialists and organizational behavioral scientists may be assigned the task of investigating alternative designs for implementation, including the formation of community groups to aid in implementation. The development of plans for the Chicago Crosstown Expressway and the Watts section of the Century Freeway in Los Angeles are both excellent examples of such planning.

In one study of a freeway system, the implementation issue was posed as a problem in the reduction of opposition to the freeway. Using the method of "side payments" referred to by Altshuler (1) and others, the cost of reducing this opposition by various means was estimated, as was the political power of various opposition groups. (To some extent, the measurement of the political power of the interest groups was, in fact, a measurement of the "degree of participation" to which Altshuler also refers.) Estimates were made of the probability that each of the ways taken to reduce the opposition would be successful, and a mathematical programming solution was generated that minimized the cost of implementing the freeway with a given probability—that is, reducing opposition below some critical level (14).

It is interesting to note that public opposition to a freeway may be interpreted as a statement that, as far as the opposing groups are concerned, the perceived costs are greater than the perceived benefits. Although this does not fix the level of either cost or benefit, the ability to implement a plan implies that the perceived benefits are equal

to or greater than the perceived costs for the political groups that play an active role in the decision process.

Since the transportation systems are rarely implemented all at once, it follows that transportation plans must be highly responsive to changes in the technical, social, and economic environment.

Adaptive planning is a method for successively modifying initial plans in the light of changing operations and reviews over time. Successful long-range plans require the consideration of possible future environments and values. One specific configuration to the future may seem probable when the transportation system is developed, and the plan will assume that certain extensions of the system will be undertaken at later dates. But the best-laid plans of transportation experts have much in common with the plans of mice and men, so alternate futures must be considered and the problems of transition from one to the other must be a part of the original plan (23). When the basic Interstate Highway System was planned, we did not foresee the rise of militant black power, for example, but as the highway system is extended into urban areas black power is an important element of the environment and the system design cannot ignore it.

Finally, considerable attention must be given to the basic economics of many of our public systems. For example, in many congested urban areas, it is quite clear that the total cost to the community for a vehicle containing only a driver is significantly greater than the price paid by the vehicle's driver. One recent suggestion would be to charge a toll at bridges and tunnels inversely related to the number of passengers carried. It should be noted that this proposal is contrary to the accepted procedure for charging for such services.

CONCLUSIONS

The coupling of community values and mathematical models seems, on the surface, to be a strange and inappropriate marriage. It is not. If anything, this wedding was made in heaven. The problems of transportation planning are so large and complex that mathematical models are rapidly becoming an absolute requirement for rational planning and decision-making. The brute fact that such models are imperfect partial descriptions of the plan and the system to which they are applied does not mitigate the necessity for their use. The fact that our ability to quantify the shadowy stuff of community values is limited to approximations does not mean that we can ignore our ultimate constituency. The fact that operations research gives no guarantee of ideal solutions should not deter our search for better answers to the critical questions we must face. The fact that mathematics cannot solve all problems, including many of those that can be quantified with relative ease, does not imply that mathematics is useless as a tool for planning.

Operations research cannot solve complex transportation problems. The necessity for planners and the public, working in concert, to make difficult decisions will not disappear simply because we employ mathematics. Operations research will merely help to systematize our information and our decision processes. Living as we do in an ad hoc world, change is the only permanent element. We must introduce order into our consideration of this changing world, with its changing needs and changing values.

Probably the greatest utility to emerge from the application of operations research methods to problems involving community values is the insight gained by working at the problems. The construction of an operations research model is a creative act, as is the development of the alternative courses of action that are to be evaluated. The process of doing operations research almost invariably generates a higher level of understanding of the system under study and of the elements affecting the system. Last, but certainly not least, the process of modeling introduces a sense of logic or order into our attempts to understand, control, and coordinate complex, dynamic systems.

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Second Workshop Reports

Allan Feldt

The general charge to workshops one and two was "means of resolving value conflicts". The first specific question was, "How can conflicts between individuals and groups within an urban community and governments be resolved?" The related question was, "Should objectors be paid off?" We identified what appeared to be six methods of conflict resolution within the urban process, none of which are surprising.

The first method of resolving conflicts in urban situations is something that is often overlooked; it is called the political process or respresentative government. We do have, in our society, a method of resolving conflicts and making choices between tough alternatives that is found in some form in local governments. Thomas Jefferson probably offers some of the best commentary on this mechanism. Until recently it has worked with some effectiveness. It seems that there has been some breakdown in recent years and it is not operating very effectively at this point. Clearly we do need a level of government on the order of the metropolitan community to deal with problems of some magnitude. We could also use some other levels of government on a more localized basis than what we currently tend to think of in terms of the city. There is a great need for innovation in governmental forms in our society. These innovations would provide mechanisms for conflict resolutions not now available to planners, transportation engineers, and so forth.

The second suggestion for conflict resolution is a process already in use in a number of places, which we ended up calling the compensation philosophy. This is a philosophy and a strategy of attack in resolving conflicts that appeals to the short-run self-interest of participants and antagonists in the issue at dispute. In such ventures, and in following such strategies, it is usually attempted to include additional benefits in the project that will provide some return for most of the persons concerned about the development of the project. This involves the development of joint development projects providing parks and additional facilities in addition to the highway. It may involve increases in compensation for relocation and things of this nature. This approach represents an attempt to provide some compensation for all participants so that they will accept the general pattern of the development proposal. Less euphemistically, it might be called a pork-barrel philosophy.

A third strategy for conflict resolution, which up until now has not been particularly widely applied, involves the question of better communication and education. I do not think we have enough examples of this. This strategy involves an appeal to either the long-run self-interest of the citizens or of the politicians or an appeal to "metropolitan morality"—trying to convince the participant and the antagonist that, although he may personally be hurt in the short run, society as a whole will benefit and he should, therefore, sit back and take it. This form of communication has a number of problems involved in it—including interminable and lengthy hearings. Nonetheless, there is some evidence to lead us to believe that it can pay off even though it may be somewhat costly, especially in terms of personnel. There seem to be many methods that can work in terms of communication and education. First is a kind of general public relations—better news releases, better descriptions of the project, better wording of the kinds of impacts it will have, possibly film-strips, and so on. Second, additional hearings and explanations to public groups. Third, the use of operational gaming and simulation techniques as a way to run through a situation that is intelligible to the layman.

A fourth major strategy for resolving conflicts was that of involving potential or active dissidents in the planning and policy-making for the project itself. I think quite a few elements of this kind of strategy were enunciated in terms of the Watts-Century

Freeway proposal. Perhaps one of the most significant elements in disagreement with a highway freeway proposal is thereby eliminated, in that the values involving self-participation, self-control, and so forth, within the local area are satisfied. The plan may be objectively somewhat better or somewhat worse, but at least the people have done it to themselves and they are, therefore, more likely to be happy with the output whether or not the results are fundamentally better.

A fifth major strategy involves a series of trade-offs. This is not unlike the compensation philosophy. In this case, however, the attempt of the highway planning strategy is to minimize or ameliorate the impact of the highway, and we have a whole range of possibilities here, most of which revolve around design innovations. For example, provision of pedestrian overpasses where possibly they are not really needed, but where local citizens would like to see them, reflects such a strategy. You give them one even though it might not be highly utilized. Possibly changing the design to lower specifications in some places, and providing better compatability with other non-related local uses also reflect application of this form of strategy.

The sixth, and last, major method for conflict resolution is an attempt to tie a highway proposal or any major public works development to some significant project that yields secondary benefits to the immediate or the general community involved. Good examples of this are highway proposals that require 10 percent or 20 percent employment of hard-core unemployed from the area affected for on-the-job training and employment on the project. It may be demonstrated that other projects are likely to yield significant improvements in local housing, and so forth. These kinds of strategies, tied to highway proposals for the general benefit of the community over and above transportation questions, seem to be likely ways to significantly alleviate conflict.

When asked the question "Should construction be stopped or delayed?" we agreed, from both sides of the fence, that it is generally not desirable to delay or stop the construction of a highway system; that it can be very costly to the project and to the total societal system. Stoppages, or attempts at stoppage, tend to bring out emotional and strictly anti-progress kinds of responses and it is very easy to slip into a non-rational and highly emotional series of developments. Stoppage is bad because of the kinds of people that get involved.

At the same time, if stoppage is to be enacted, it would be most helpful if clearer identification of responsible local authorities who have the power to stop a project were made. The highway engineers are in a somewhat difficult position in trying to decide who, in fact, has the authority to stop a project and under what circumstances, aside from the obvious authority exercised by people lying down in the path of bulldozers. One advantage of stoppage is that it does result in the concentration of efforts within the design office and the engineering office upon the project itself.

Finally, it must be recognized that stoppage of a project is the last resort of the offended or the antagonistic groups. Although it may be undesirable from many standpoints, stoppage of the project by whatever means is a last-ditch effort at communication to the authorities involved that the project has not resolved its conflicts and it has not followed appropriate procedures for conflict resolution. It is an attempt to communicate over, above, beyond, and around the available channels of communication that have been previously provided.

Joseph Schofer

We felt that in most cases it was not really the job of the planner to resolve value conflicts. This was, in many cases, a political decision-making responsibility. However, there are at least threee areas associated with the resolution of value conflicts in which the planner can be helpful. The first is the development of an environment for encouraging the free flow of information between interested parties, both private and institutional, during the planning process. The second is the reduction of value conflicts through better and more sensitive project and system design. The third is the

provision of comprehensive and, to the extent possible, quantitative information to decision-makers describing the nature of expected impacts of those facilities, as well as the incidence of those impacts.

We felt that this idea of maintaining an environment so that communication could take place between interested parties—institutional parties, individuals, groups, communities, and "the establishment"—is a primary function that planners ought to be serving as soon as possible. There is a credibility gap now between "the establishment" (the planners and engineers) and community residents. One way in which this gap can be closed is to involve the relevant parties and institutions in some way in the planning process as early as practicable, so that it does not become an action-reaction situation but is a cooperative venture—perhaps even adventure.

Another way for improving the communications process would be to make it very clear to interested non-professional parties precisely what kinds of assumptions and reasoning lie behind specific recommendations. This seems to be an issue that comes up at many public hearings.

Another activity that probably ought to be undertaken is the early identification of relevant individuals and groups as a part of the standard data collection process for transportation planning. People in the highway field ought to take advantage of some of the structures now existing in communities, perhaps under the guidance of agencies like HUD and OEO.

It was suggested that special caution ought to be used to explain to the decision-maker the basis for and the reliability of the information he is given.

There were some suggestions in our group regarding changes in the planning process itself, so that either value conflicts would be less likely to arise or they would be easier to resolve. These also have to do with such things as citizen participation and the interesting kinds of examples described in Chicago and Los Angeles. It was, however, suggested that the adoption of hard guidelines in reference to such things as joint development might create some serious problems in particular areas where these general types of solutions might not apply very satisfactorily.

If we are going to make efforts to resolve or avoid value conflicts, then we ought also to consider the plight of the highway departments and the Federal Highway Administration, because we expect these agencies concerned with transportation planning to do a better job and to have the right kinds of skills represented on their staffs. Another interesting idea was the concept of providing in-service training programs for transportation planners and urban planners who are, hopefully, going to adopt some of the ideas that are coming out of this Conference and other conferences like it.

It was the consensus of the group that some form of just compensation should be developed to minimize or eliminate the resulting "pain" associated with the introduction of a transportation facility in an area. It was suggested that the planner attempt to develop alternative forms of compensation to go along with alternative transportation plans. We recognize that it is going to be as difficult to evaluate the compensation schemes as it is to evaluate the transportation plans themselves, primarily because in the most important cases we are probably going to be compensating the loss of intangible values in tangible ways. We will have to develop some accounting schemes that allow us to identify the costs of a highway project that are associated with compensation so that we can perform this process of relating the loss of values of interested parties—individuals, groups, and institutions—to the actual dollar outlays for special projects. It would not, however, be necessary to compensate in kind. It might be quite appropriate and rather innovative to substitute one facility type for another, if the other was something that was needed by the community.

Another suggestion that was made was that compensation should be considered in terms of replacement cost rather than market cost of facilities taken for highway construction. In addition, special compensation is recommended for disadvantaged parties, particularly the elderly, the poor, and some minority groups that might find it very hard to adapt to a new situation.

It was also agreed that further research will be necessary to establish valid guidelines for compensation for intangible values such as the family home or the childhood

neighborhood that is taken by transportation facility construction. New planning strategies and legislative changes may also be needed.

We came up with a list of a dozen research recommendations. Here are some of the questions that need to be answered: What is the expected spectrum of future effects of a transportation improvement on an area? What part of any changes that occur in an area are attributable to what characteristics of the transportation system? How should the relevant communities for evaluation of a particular transportation project be defined? What are the most effective ways for reaching the people in the community for participation in transportation design, planning, and evaluation? In what ways may various interested parties best participate in transportation planning? How can those community values that are now known only qualitatively be quantified in a meaningful way and how can those that are quantifiable be converted into dollar values? What are the most promising organizational structures for conducting planning? How can flexibility be introduced into the planning process and into planning organizations? What are the most promising strategies for implementing planned transportation projects? What are the most effective strategies for introducing any kind of change into a community? What are the most promising decision-making strategies for considering the multidimensional set of community values in transportation planning? This is, considering that it is very unlikely that even in the long run we are going to be able to convert all of the consequences of transportation alternatives to a single dimension, how are we going to treat these in an effective decision-making process? What are the best examples of comprehensive, sensitive and effective transportation planning today?

It was suggested that case studies be prepared and disseminated providing an evaluation of the strategies, tactics, and designs used in some of these good examples so that we could learn from them. It was also suggested that several neighborhoods, communities, or even cities in the path of transportation projects might be developed as full-scale experiments to gather data and test innovative strategies, tactics, and designs.

S. M. Breuning

Our group dealt once again and exclusively with measurement of values. The group believed that more rigorous treatment of individual and community values in transportation studies is possible and desirable. To obtain value measurements, transportation planners should avail themselves of professional services from whatever disciplines or professions are available. Community groups and social and behavioral scientists should fit particularly well into the framework of the transportation planning process.

There is a far greater body of knowledge buried in books than many of us know. Value diagnostic techniques exist and some of them are relevant and important. These techniques include participant observation, structured attitude surveys, unstructured attitude surveys, rating scales, more generally constrained responses, paired comparisons, operational gaming, weighting schemes (where relevant participants are involved), and activity analysis. Recognition of these techniques as a valid component of transportation planning should be developed.

Right now the highway planner is not adequately informed, the community is not adequately informed, and, therefore, misunderstanding is almost inevitable. Vocal members of a community carry far more weight than their actual position in the community justifies. In many cases the highway planner plays a waiting game and is unaware of the alternatives that he has available at any particular time. The community is relatively uninformed about the possible consequences of alternatives because nobody knows what they are. The information flow can be improved if the highway planner first seeks to understand community values and then puts them in a systematic framework. Value scales that are relevant to communities and methods of determining the trade-off of these values through the physical environment can be developed in some cases. But even with an adequate information system, the same problem does

not sound the same to different groups and needs different interpretation. The natural bias of the highway engineer, the highway planner, and any other professional involved must be recognized and described so that others can take it into consideration.

An evalution should then be used as a means for informing the community about the planned transportation system and its consequences and for obtaining an understanding of the community reaction to the planning process.

Allan Jacobs

We all agreed that, regarding the question of values, black people basically want the same things as white people. We also noted that comprehensive planning is fine but only if it is relevant, and a lot of the time it is not.

We all seemed to agree that land use projections are extremely weak. Land uses that are proposed—presumably upon which transportation systems are based—usually do not happen. This implies a need for flexibility and adaptability in working out both land use and transportation plans. Another approach to the problem is to fix and plan in detail only those facilities that count or that are the most significant or give major form and development to the urban structure, such as transportation systems, open space, and utility systems.

Another weakness in the planning process now is that there is a built-in highway bias in the present process. That is, given present dollars, and where those dollars are, almost all of the plans will be oriented toward roads. The modal split question always comes out in favor of the highways. This suggests that a policy change is needed. One proposal in this regard is that equal federal resources for other modes be made available. If we make enough aid available to allow a choice the bias might disappear or be reduced. There should be the same matching ratio—90-10, 50-50, 75-25, or what have you—in the funding of all programs.

A third weakness is that the process goes on almost to conclusion before there is any attention by the political decision-makers, political decision-makers being either the elected officials at the city level or residents at the local levels. Consultation to this point is most often only at the technician level. Interaction is not likely to occur until the community or person feels it. There is at least a two-way responsibility here and the city should be responsible for initiating its basic transportation policies. We are aware of the problem of "Tell us what you want?" from the federal establishment or the state versus the "Tell us what you're going to do?" answer from the locality. This means that as long as this kind of situation exists, we have to be prepared to go back to the drawing boards; we have to "stay loose" and we seriously suggest this as a point of view. Elected officials must continue to have the responsibility of selecting projects that must go ahead. Participation is likely to remain at the level of how the project goes in, not if the project will be carried out. I might say that there was some significant disagreement within the group on that matter.

Irving J. Rubin

Our workshop considered means of improving the transportation planning process, and arrived at consensus on the following points.

Land Use Planning—It is important that the distinction be clearly made between transportation planning requirements for developing solutions to needs that either exist or will inevitably develop in the medium range as a result of facility and policy decisions already made and, on the other hand, planning process requirements for developing solutions that go beyond existing and predetermined development. In the first instance, the transportation facilities must serve demand that is reasonably predictable. In the second instance, the requirements are more complex—transportation facilities must

serve the needs generated as a result of implementation of the future land use plan, but should also encourage development consistent with the plan and discourage and inhibit patterns of development that conflict with the plan.

To accomplish this end, the land use input must be adequate to enable the planner to predict travel demand and determine where transportation should be restrained, by limiting accessibility or, in some cases, by providing no access at all.

There should be increased ability at the regional and local level to control land use patterns and assure implementation of the land use plan, since this is a basic assumption upon which the transportation plan is based. The land use plan should make the assumptions upon which it is based explicit so that the transportation and land use plans can be adjusted responsively to growth and development as it occurs, should it prove to be inconsistent with predictions.

The land use and transportation planning must proceed with an understanding of the range of possible alternatives—physical, social, and economic—and a statement of goals and objectives that is responsive to regional, local, and interest group values. Techniques must be developed so that alternative combinations of physical facilities and policy plans can be evaluated in terms of the degree to which they meet goals and objectives and satisfy the values of various groups within the planning area, as well as those of governmental and private agencies, and of institutions.

Comprehensive Planning—It is recommended that a continuing comprehensive planning process, of which transportation is a major element, be a requirement for all federal grant award programs. Current requirements are explicit only with respect to transportation planning in metropolitan areas. This process should include continuing evaluation of the relationship of plans to community values.

It is recommended that intergovernmental cooperation in this comprehensive and continuing planning process be encouraged and facilitated, perhaps through the use of financial or other incentives. Although councils of governments currently would appear to be the best agencies for this purpose, it must be recognized that the broader the participation of political jurisdictions the more likely the development of plans reflecting the "least common denominator of regional consensus", that operating agencies often having greater power than local governmental agencies are not eligible for membership in many councils of governments, and that internal and external organizational problems can easily arise from an apparent conflict inherent in many councils of governments—their desire to maintain an image of weakness and concentrate on voluntarism and cooperation in the face of rapid escalation of problems that call for strong leadership to force decisions.

204 Review Process—In order to increase the likelihood of objectivity on the Section 204 review and comment process, it is recommended that the federal government provide, to each agency having this responsibility, 100 percent of the funds required to perform the review and comment function.

Metropolitan Decision-Making—It is recommended that machinery be created within each metropolitan region that will permit the resolution of interagency conflicts by a device approaching biding arbitration where the matter at issue is metropolitan or regional in nature and good-faith efforts to resolve through cooperation fail. Cooperative voluntary efforts to resolve conflicts have not been successful on many regional issues. It is felt that the existence of such machinery would probably assure its non-use as agencies would make strong efforts to avoid stalemate.

Serious consideration must be given to the development of metropolitan forms of government, recognizing the conflict between self-determination, home rule, local control, black power, and the needs for a sense of community, on the one hand, and the need for resolution of metropolitan issues, the desire for efficiency, and the requirement to continue to progress on the other hand. The committee was not in agreement on recommending this, however, because of the many complex questions that cannot be adequately dealt with in view of the Conference limitations on time and purpose.

Community Involvement and Participation—Arrangements must be made to provide methods for involving sub-communities within larger cities in the actual decision-making process, and in exercising control over certain elements of governmental operations, especially those that are most local and personal. Many ways are open to achieve this, from de-centralization of some governmental functions, through amended

city charters providing for either some or all of the members of the local governing body to be elected by smaller areas than the entire city, to the creation of citizens' advisory councils. It is felt that by providing citizens with real opportunities to influence the course of governmental decision-making, some of the opposition to transportation facilities, to hospitals, and to urban renewal projects (which is often symbolic) may be eliminated, thus paving the way for more equitable and less time-consuming resolution of conflicts.

Advocacy and Information Availability—It is recommended that "powerless" communities be provided with funds that will enable them to retain their own advocates as more affluent communities have done for years. In this manner, opposition to a proposed project is more likely to be on a basis that can be resolved to the mutual benefit of both the transportation agency and the community. In most instances, it will enable the community to extract far more concessions than otherwise possible, and frequently to achieve major reconsideration of the basic proposal.

For the advocacy activity on behalf of the community to be effective, all agencies must be required to provide information and data in usable form. In addition, there should be a continuing program of advising communities as to proposals that may affect them and of providing opportunities to study the projects before final decisions have been made.

Public Hearings—The public hearing should be regarded as part of the process of providing community understanding of the proposed projects and an opportunity to participate, comment, and be heard. Hearings should be preceded by distribution of maximum amounts of information within the community affected, pre-hearing meetings with community leaders to help them and to help the transportation agency anticipate problems, and adequate study and evaluation of the alternatives. Simultaneously, a study of the community to identify community needs, wants, desires, values, and problems—both real and perceived—must be made to help guide the planning process and to permit identification of the "questions" before they are asked. Efforts should be made to encourage wide attendance and participation by supporters of a project, as well as by those who either oppose it or question it. Hearings should be held in locations and at times convenient to the people affected, and in addition to providing maximum opportunity for questions and statements from citizens, should include responses from public officials.

Joint Development Projects—The joint development concept presents an opportunity to achieve optimum return on public investments, to resolve conflict, and to achieve proper staging of a multiplicity of interrelated projects under the jurisdiction of various agencies. Joint development projects should not be undertaken, however, unless there is a real likelihood of translating them into action. This requires that adequate funds for planning and design be made available, that all of the agencies involved have sufficient assurance of long-range funding and planning stability, and that interagency agreements on implementation can be entered into and honored.

Kenneth Shiatte

Our charge was, in general, "What are the engineering means for reducing the impact of transportation facilities on the urban community, what landscape and architectural means are there, and, finally, can buildings or building groups be arranged so as to lessen noise, vibration, and air pollution?"

Looking at many of the detailed items that we have to consider from the standpoint of engineering, architecture, landscape, and the ecology of the area, it became very apparent that the design team was definitely the route we wanted to take and to discuss. It is very hard to bring together all these different disciplines to create physical projects that are integrated as a whole without having an understanding of how each of these pieces fits together.

The starting point of project development should be a reconnaissance or fact-finding tour of the area. This could involve surveys of many of the different physical aspects. We should develop an activity pattern, some composite ideas in each sector before bringing them together into alternative development plans. This then leads to a process where you have to consider values when you start evaluating the alternatives, measuring the impact and the evaluation process, and getting feedback between impact values and detailed alternatives. I feel many of us are novices to this new approach; although we understand the broad concepts, we have not really looked too much at the problems of putting together a team to produce a salable project for a particular piece of our urban environment.

In the reconnaissance, we felt that we had to understand a little bit about the nature of the area—the plant life, the existing materials, and so forth, that would later be used, and possibly some of the landscape or architectural treatments, the climatic, hydrological, and geological assets and problems of the area. We should consider some of the points of visual interest—the natural scenery or man-made structures we want to insure we have a good view of. We want to identify areas that would be obstacles to the location because of the steepness, because of wetness through flooding or soil instability. We want to identify areas that should be avoided to preserve costly or historic developments.

The next aspect of looking at the details was the landscape design we should employ. We felt we have to be very conscious of a buffer between the road and adjacent areas in order to lessen the impact of noise and provide a feeling of openness to areas adjacent to the facility. We want to ensure that any embankments we put up are going to control not only erosion but are pleasing to the eye. We want to provide for the social and recreational amenities of the neighborhood. We want to open vistas and points of interest. We also felt that if we are going to have a pleasing architectural and landscape treatment of a project we would have to introduce experimentation with new materials that would enhance the area.

Tom Roberts

Our charge was "What activities can be taken at the metropolitan level to reduce the severity of impact of transportation facilities?"

National, state, and local land settlement policies can be brought to bear on the metropolitan level. For example, new communities can be developed outside of existing metropolitan areas as an alternative to the continued spread of existing centers with its associated construction and reconstruction of transportation facilities. Obviously, to begin with, this would require that we have a national land settlement policy and, hopefully, state policies as well. This would also require some kind of real financial incentive for local governments as well as private developers to implement these policies. Federal grants for sewer, water, parks, housing, transit, and roads could be funneled to localities willing to implement the policies; grants could be reduced for those who were not and increased for those who were.

New community or other proposals should be required to be in fulfillment of stated social and economic objectives, such as jobs and housing, and not simply to be used as a reconfiguration of typical suburban development.

We felt that we should try to find ways to ensure the dissemination of public information and policies and decisions so that everybody and not simply federal, state, and local officials and some more of the more fortunate developers would have a chance to use this information and act on it. We felt that the result would be that people would be able to determine the effects of public action or public inaction on their own values and welfare and respond accordingly.

The public, we feel, should get heavily into the land business and this could be at the metropolitan level through a land development corporation.

We felt that a multi-disciplinary staff approach was appropriate and necessary for metropolitan and network planning. We did not have in mind that this should be an institutionalized form of citizen participation, although that may be necessary, but there should be access by the staff to nonprofessional or consumer viewpoints.

We feel that the funding of transportation projects should be accompanied by sufficient funding for associated problems, such as housing, community facilities, and amenities.

Finally, metropolitan planning and communication mechanisms, whatever form they take, should incorporate state and federal representation as well as local representation and they should be financed in an adequate and stable manner.

General Discussion

Don Spaid

I would like to take the role of the advocate planner. In the discussion here, metropolitan government was almost summarily dismissed. I would like to suggest that the metropolitan area is without voice. It is fragmented into local voices. It is being interpreted by state voices and administered and regulated by federal voices. The metropolitan area needs a solid, single, solitary voice and this voice should have, to the extreme, veto powers over all actions that take place within the metropolitan area. I know that this works. I know that it can be implemented.

Allan Feldt

If I gave the impression that we had summarily dismissed metropolitan government in the first panel, I apologize. I only wanted to emphasize as well that we really need three levels of government in the local area — metropolitan; something like the present city; and something down there within the city. I wanted to make sure that the third level, which does not have the same standing as the metropolitan government, got through. I agree completely with your point.

Milton Pikarsky

One of the comments that came up was the question of providing replacement housing for those persons displaced by the highway project. The discussion brought out the fact that perhaps highway agencies should very seriously consider going into the housing business to provide this replacement facility. This requires legislative changes, both at the state and national level. Where highway agencies do not have the housing to relocate people, the projects, if they are to follow the present federal guidelines, would stop. I submit this for consideration in any guidelines that come out of the Conference.

Anatole Solow

In conflict resolution—I am talking essentially about the inner city and the ghetto areas—there has developed a tremendous credibility gap and no matter how you move in the reaction is, in advance, a preconceived opposition. There are techniques to change this somewhat.

Although communication and statements of truth will help, the image has to be changed. The image of the highway engineer was mentioned, for instance. How do you change images? Some very serious effort and inputs have to be put into that. When you create housing for re-housing in advance, you overcome a certain credibility gap. Guarantees must be put up in advance. Another possibility is to produce other creditable projects of immediate accomplishment while long-range transportation projects are being superimposed over a particular community.

Allan Feldt

This is not a problem unique to engineering. We are faced with a situation in which a substantial proportion of the American population, largely black but not exclusively, does not believe that the system is operating for their benefit. And perhaps it has not been. It is not traffic engineering, it is the system, and this is a very big problem. I do not think there are engineering solutions to this problem.

Irving Rubin

We should not get too much enamored with the credibility gap. My experience has been that you are either real or you are not real and if you are not, then nothing you are going to do—and when I say you, I mean the institution or the people in that institution—is going to overcome that. I am just not sure that dealing with the credibility gap directly gets you very far.

Casey Mann

I take grave differences with the contention of resolving conflict on public development matters. I think what we should be about is amplifying conflict. I think what we should be about is having equitable distribution of those facilities and techniques and information and resources on both sides of the advisory question to amplify conflict. I think one of the problems that highways and other kinds of ways have run into is that the conflict comes to a critical point after the plans are fixed. The people that the plans are fixed upon and are disrupted have no other recourse than a reactionary recourse and, by any means necessary, to resolve the question for themselves....

The incentive ought to be taken out of ramming highways through. The incentive ought to be taken out for those who profit the most from highways or put in for those who are disrupted the most by highways. That is a general framework....

Irving Rubin

The resolution of conflict is a good thing if you can anticipate that the conflict is going to be resolved in such a manner that it will make you happier than if it is not resolved. But if you expect that you are going to lose, then you are probably better off keeping the conflict going until you are in a position where a resolution is going to be in your favor.

I would suspect that all of us who are, or have been, highway practitioners are probably reasonably adept when we know that we have to build a freeway between Point A and Point B and there are a bunch of suburban communities in between. We are probably reasonably adept at figuring out beforehand what the questions are going to be, what the problems are going to be, and which facilities we had better stay away from and which ones we can afford to louse up slightly. We can identify the potential propinquitarians, but we run into horrible problems when we begin getting involved in the black community.

Years ago this was not too much of a problem. That was before the riots. It was when the urban renewal projects and the highway projects were really not too indistinguishable from each other and when we were dealing with a community that was largely voiceless and powerless, and nobody was really paying too much attention. Now we find that we are going to have to deal with these people because they do have power, they do constitute a threat, and we are finding great difficulty in doing so. And this is, I think, a real search.

We are really talking about an effort to identify community values. Maybe they cannot be quantified. Maybe the best that we can hope to come out of this is a checklist of things to watch out for. You go through this checklist community by community and figure out which ones are going to be trouble and which ones are not going to be trouble and then you look at them. You watch them, because the values within each community are going to be substantially different.

S. M. Breuning

The question really is, "Has there been a change in the basic function of the urban transportation system and in the organization that should provide and represent the basic need for this transportation system?"... The other point that we were trying to make is, if you do have community values, they can work both ways. If you are going out to the community, do not just go out and try to tell them as little as possible; go out honestly if you want to have them participate. They may have something to say and they may give you new ideas and new concepts.

Margaret Shaffer

Just because, at present, we do not know how to communicate with a subgroup that has emerged, this does not mean we should not try to. In a similar manner, just because we cannot put a dollar figure on something yet—maybe we never will—that does not mean that we relegate this to the bottom of the pile. Always before we have dealt with community values as a middle-class phenomenon. It no longer can be viewed as a middle-class phenomenon because middle-class values just do not apply across the board.... You have to have the information before you go into the public hearings; you have to have the means to communicate. If you do not have the means to communicate, you may as well forget about trying to get anything implemented....

F. David Schad

Over time, in the transportation business, there has been some sort of sophistication which says that looking at projects is not enough. We look at systems. Systems are broader than neighborhoods. Systems are at least metropolitan in area and consequence. We are not having questions arise about community values in association with these area-wide transportation systems. I wonder if we are not having these questions because the value system is already built into a transportation system design or whether such values are indeed inconsequential at this higher level of abstraction....

Joseph Schofer

I think perhaps we are back to the Chinese Box again. The big box does not bother anybody because they do not know what is inside, but any kind of broad-scale system proposal, network proposal, or comprehensive metropolitan plan has local and neighborhood household community implications.

I have visited a number of hearings held in the Chicago area by the Northeastern Illinois Planning Commission and there has not been a lot of fruitful interactions be-

tween the people that have come to the hearing and the people that are conducting the hearing. I interpret this as a situation in which the people coming to the hearing do not see any implications for themselves in these broad-scale plans, but they do see implications for the small-scale neighborhood plans. But, since whenever we make decisions about network level investments we are talking about some very important implications at the project level, I do not see how we can effectively separate these. I suppose that there are opportunities for making some very broad, very general decisions at the network level, but still you are going to run into the same kinds of problems and I would expect that you would run into the same kinds of value and value conflict problems at the neighborhood level....

Erwin France

There is a whole segment of the community that has been tuned out.

Black people want the same things white people want.... Basically people want to be recognized. That is a human value. If we respect black people as people and deal with black people in much the same way we deal with other people then I think we will have made some progress in terms of trying to understand the values that are at work, at least in the black community. I do not think that they are any different from the values that are at work in the white community. The notion that there are certain values that are more identifiable or more crucial in the white community than in the black community, I think, is absolutely ridiculous. It may very well be that the question of identity is more crucial, as we perceive it, in the black community than in the white community because, in the white community, it is not an issue. You know we sort of take it for granted, but at the point at which we deal with the black community it becomes another kind of an issue....

Irving Rubin

Perhaps I did not succeed in making the point as I had wanted to with respect to the ability of the highway practitioner to anticipate the hang-ups he is going to encounter from the white suburban community and his inability to do so in the black community. I certainly agree with you that the basic values are the same but I think that because of substantially different physical, social, and identity situations with respect to the black community, which are a result of the historic way in which the white community has treated the black community, that one encounters, today at least, a host of problems that differ substantially from those encountered in the white community.

The specific I would cite is this. I spent three days sitting with the transportation subcommittee of the Model Neighborhood Program in the City of Detroit, an effort that was fairly successful in developing a set of goals and a set of projects with respect to the model neighborhood program. We went in there, all of us white folks, assuming that what we considered to be important with respect to improvement of transportation in the black community would be accepted by residents of the model neighborhood as being important. We felt that going ahead with a massive transportation unemployment bus project would be important in order to increase employment opportunities. We felt some modest widenings and improvements in intersections in order to increase safety would be important. There were some other projects we felt were quite important.

Casey Mann

Excuse me. May I interrupt you for just a second? I think you are making my point for me. That is precisely what I am saying. You would not have gone into another white community assuming that the things you thought were good would be perfectly clear and perfectly understood by the people of that community.

Irving Rubin

I am not saying that those things were not important in that community despite the reaction of the people but what we found was that they were not the least bit interested in discussing a transportation unemployment project or improvements of the grade separation or improvements in the intersections because their concerns, with respect to transportation, are related to getting the abandoned cars off the streets, cleaning up the alleys, enforcing the laws that prevent trucks from rumbling through the neighborhoods, and so forth. So what we very quickly learned was that there are certain very personal, very nagging problems that must be dealt with before the people in this community can feel sufficiently comfortable and sufficiently certain that government is going to deliver on some minimal promises and begin to talk about the kinds of things which I am convinced are important and which, if we ever resolve the problems of the abandoned cars or the dirty alleys and the trucks going through the community, will then become the important things.

Lowell Bridwell

I think we are uptight on the whole question of the black community. I think, for example, that there have been any number of instances in the course of the Conference in which values have been tossed out too lightly in what I would call deference to the black community or in deference to the black participants in the Conference. I think Mr. France makes a completely valid point in saying that black people want the same things white people want. Assuming the validity of that point then, we really should not even be talking about values in the black community and values in the white community, but rather we should be talking universal human values. I think we probably confuse ourselves in the process of trying to enumerate and place some weight upon values if we do them in the light of black communities or white communities, rich communities or poor communities, or any other kinds of communities. I think it takes nothing more than a recognition that different weights or different priorities will occur throughout a community almost regardless of its makeup.

There has been considerable comment upon communication with the black community. I am not sure that I would have any more difficulty communicating in a black community than I would have in communicating in any other kind of a community in which I had had no personal experience, such as an extremely wealthy suburban community, because one relates his discussion to a common set of experiences that he readily understands and recognizes and assigns his own values. So I am not so sure that it is difficult to communicate with the black community if one is just willing to spend enough time and work hard enough and listen hard enough so that he begins to obtain some comprehension and some understanding.

We have very loosely—and unfortunately loosely—used the term participation. I have heard the term participation used, at least in what I understood the sense to be, all the way from a very loose and quick pass at an institutionalized community group to the other end of the scale, which is some kind of a loosely identified citizen decision-making process. It is probably a meaningless range if we are really seriously concerned about how you solve the problems of conflicts between public improvements and

community values and, in the final analysis, that is what we are supposed to have been doing for the 2½ days we have been here.

I would suggest that participation means something considerably more than that quick pass for appearance's sake, but that it stops short of decision-making, recognizing that there is not universal agreement on the subject among the persons in the room. In any kind of major public works activity, the planning and design stage up to implementation will consume a considerable amount of time under the most expeditious set of circumstances. Given the fact that values are nevertheless absolute over this period of time, the relative weight among values will shift and change and priorities will change. Therefore, it becomes necessary, if one really does want some degree of participatory democracy, that there be a relatively continuous head-to-head confrontation and negotiation on the part of those who legally, statutorily, have responsibility for carrying out a given public works program and those who are affected or impacted by it either for good or for bad. It is this head-to-head confrontation and negotiation that has been the most successful way of solving, or perhaps not solving but alleviating, the impact conditions that will occur in every single solitary project in a congested urban fabric.

I would really seriously emphasize that the one almost universal theme that has run throughout this Conference is the one to which we have really paid the least attention in any sort of a definitive way. The only method that we know of now, and which apparently is pretty well shared by the group, is that of conflict resolution.

John Stone

It is accepted by most of us that the values of black people are the same as the values of white people and that, at the bottom, there are certain fundamental values such as the opportunity to know about what is going to affect us and to at least have the opportunity to say something about it....

The problem then becomes one of communication. The situation now with respect to communication is a very difficult one. My experience has been in communicating with black people, that I am not believed. I am not only white but I am also a member of the government. The government is somebody else's government and it has a long history of what is interpreted by the black people as oppression. The system is interpreted as oppressive. It can be summed up, I think, by a statement that was made to my boss, the Urban Renewal Director in Washington, by a community worker in the black community who had been banging around in some of these problems for a long time and had some sophistication concerning who was playing what roles and what the process was. That person said, "Tom, you're one of the most responsive public officials I have ever known. It's too bad you're the enemy."

Lewis Hill

I think we have had a tendency during the Conference to isolate transportation planning and values as something unique. Transportation system or transportation project planning is not that unique in the eyes of the community. Of the local transportation people who are responsible for going out to the community, very few will operate with that give and take to the average person in the community. The transportation person most often will be the local government transportation man who in the first instance is not the transportation planner but is the voice of local government....He will be called upon to defend all other public actions.

I think we have to put transportation planning and community values into that context at the very community level because, at that level, it is not so neatly separable. At the

community level this aspect is more a voice of local community government than it is transportation planning per se.

It is in part of this vein that I, too, rebel against this question of having the transportation system replace the housing that it has displaced as opposed to the transportation technicians looking at the total scene and asking what is the total housing situation and if, in fact, they are compounding the problem and making it worse. It would seem to me to be impossible for you to go to a community and say, "Well, the freeway is going to take out these ten houses so we'll replace these ten." There may be ten families who live across the street in a much worse housing situation and, because they are not being touched by the freeway, they do not get that benefit. I think you can magnify and compound that problem endlessly. Rather than replacing in kind, that piece of it, it would be better for the transportation specialists to look at the other areas of deficiency in the community and join with those forces to bring it all up and really do an adequate job.

Ralph Bonner

I feel that many of your agencies (perhaps including the sponsoring agency), in terms of enlightenment and concern, could have their own in-house black radical—and I said black radical, not in-house "Uncle Tom", which has been the situation that has existed in the past. Then, perhaps, someone could constantly be making them aware of certain things so that the minor things would not be forgotten. These fellows have a message and, whether you believe it or not, their message is real and genuine. But it is a message brought out of a psychic deprivation of the past. Now they are trying to get some recognition of basic human needs and basic human values. And, they are trying to overcompensate for all the years of silence.

Reports on NCHRP Project on the Impacts of Highways Upon Environmental Values

NCHRP stands for the National Cooperative Highway Research Program. It is a program established in 1962 and supported by the states through the American Association of State Highway Officials and the Bureau of Public Roads of the Department of Transportation. It is administered by the Highway Research Board.

The next two reports are about a project selected by the states and titled, "The Impacts of Highways Upon Environmental Values." It is in two phases and the reports presented are on Phase I only, which is a methodology study or a proposal of how the two research agencies would go about determining these values.

The Project Advisory Committee received 28 proposals for this study, which is the largest amount ever received by any of the NCHRP projects and is indicative of the interest of the highway community in this problem. The Project Advisory Committee selected two agencies with the hope that two different approaches to this problem would develop. The first research agency is Daniel, Mann, Johnson and Mendenhall; Abraam Krushkhov reports for this agency. The second research agency is MIT; Prof. Marvin Manheim reports for them.

Abraam Krushkhov

One investigation we made had to do with the functional concept of value. We found that values are abstract thoughts or ideas that are shared with other members of society about ideal modes of conduct or ultimate goals. Their primary functions seem to be to control the organization of society by defining expected behavioral responses of society's individual members.

Another very important part of the investigation had to do with the impact of highways on environmental values. It exposed how little has been done in relating urban transportation to environmental values. With respect to the impact of highways on aesthetic values in the environment, we found that the design of freeways by highway engineers backed up by specialists schooled in urban design would have avoided much of the aesthetic pitfalls and the environmental insults for which the whole freeway system is presently being criticized. We also found that a freeway or a highway does not in itself create an aesthetic good per se, due to the tremendous amount of traffic it brings into a community. What does promise benefits is the spin-off in the creation of urban space and structure, particularly if the freeway can be made to fit unobtrusively within an environmental context.

With respect to the impact of highways on social values, we found that the control of one's destiny in his environment is clearly one of the most important factors in today's highway planning process. We also found that, like few other major public improvements, a freeway can test the quality of homeostasis in a community—that is, the ability of an individual, a group, or a community to adapt itself to its changing environment. The best illustration of the impact of highways upon political values in the environment, of course, is this Conference, at least in my terms.

Many people are familiar with the long history of Baltimore's freeway planning troubles and the sequence of events that brought about the formation of the Baltimore Urban Design Concept Team. And without getting involved with the details of actual freeway planning in that city, I would like to comment on what our analysis taught us about the joint urban design concept approach. The idea of the concept team combining many skills and devoted to improving environmental concepts is a laudable one. It is

self-defeating, however, to establish such goals without insisting on a total analysis of urban growth, social structure, and political institutions. It is nearly impossible to inject an ad hoc organization into a delicate and complex structure such as a city and expect it to come up with organic solutions to long-term problems. What is needed is both a methodology for attacking urban design problems and a long-term commitment to live with the process of their resolution.

The main feature of our proposed research plan to carry out the design study will be the use of a pre-project and a post-project analysis in terms of historical and in-process field investigations. A substantial amount of methodology already exists for measuring the impact of highways on environmental values; these range from conventional data collection, analysis of projection techniques, questionnaires, interviews, and attitude surveys to new methods utilizing user panel techniques, route location planning simulation, games theory, and audio-visual devices and modeling techniques, among others.

After reviewing all the findings of the design study, we conceived of a research hypothesis that would permit a comprehensive approach to all the major aspects of environmental values and the impact of highways upon those. Our aim was to prepare the kind of program that would involve and serve both the people for whom highways are built and those who design and build highways.

The research hypothesis foresees the development of four major tools. Our first tool is a checklist composed of important environmental values. The next tool would be a descriptive encyclopedia of each item on the environmental values checklist. There also would be a rating chart. The last part of our hypothesis would be a program of instruction for highway planners, administrators, and educators and it would be implemented by the consultant to ensure that all parties understand the use of all tools devised in the program. To make any tool of this nature valuable it must be updated at regular intervals.

Although our research hypothesis may appear to be a simplistic approach to one of the most complex urban problems of our time, it is our belief that it would provide a basic format for communication, understanding, and improved highway design.

Our orientation is basically humanistic, in that we recognize that man has to move away from his perpetual preoccupation with controlling the physical environment in the direction of better understanding and totally relating himself to that organism called his community and his environment. The program is designed to be objective, ensure maximum involvement of all concerned parties, stay on top of the technology and the state of the art, and move directly into the highway design program right where the human needs, the raw data, and the social action are with a minimum of delay. The approach is that of a multi-disciplinary team of practicing professionals who can work quickly and effectively with practicing professionals in all the design fields.

Marvin L. Manheim

In evaluation we are concerned with things that appear to be incommensurable: money, construction, vehicle operating costs, versus families displaced, parkland removed, noise pollution effects. We are also engaged with balancing the short-run versus the long-run. We operate as professional engineers and planners precisely to find the balance between the short-run perception of needs and options in the community and the long-term perception that no individual really grabs hold of and fights for. The essential issue in evaluation is which groups gain and which groups lose as a consequence of each alternative policy.

How did we get the predictions of impacts in the first place? How did we measure the impact on a family of being relocated or the perceived aesthetics of the driver moving over the highway, someone seeing the highway from his neighborhood playground, and so forth? Where did we ever get those weights from? Whose numbers are they? How do we decide what value each group in the community places on its impacts versus the values that should be placed on impacts on different groups?

What we have learned about benefit-cost analysis and standard economic criteria is that they hide the issues, they do not display them. Do we really want to treat evaluation as something that comes at the end of the design process, when we have two or three alternatives relatively preconceived and then we are concerned with choosing among them? Or, maybe we want evaluation to play a more positive role in the process. And one of the things we want to do clearly in evaluation is not hide the issues by computing a total score, such as a benefit-cost ratio, but explicitly trace out the differential impacts on each group in the community.

What must be evaluated? We want to evaluate all the impacts, whether quantifiable or intangible. If they are intangible and hard to get hold of that probably means that they are the most significant impacts.

Our conclusion is that it is impractical to try to find a consistent complete operational statement of community values because the individuals in the community do not know their own values. Their values are continuously changing over time. They only get an idea of what their values are or clarify them when they are forced to make choices, when they buy something or when they are forced to take a position or when they are forced to vote on an issue. Individuals cannot express their values abstractly.

In the surrogate approach, the engineer tries to estimate what value a group or an individual in the community places on a particular set of impacts. He is projecting the preferences of an individual or group vicariously...when people do not know their own preferences themselves. And, if the engineer is to get support for a recommended highway based on an approach in which he has projected preferences vicariously, there needs to be substantial public confidence in his ability.

In the interactive approach we try to get people to make choices about alternatives and thus provide direct information on their preferences. Not only does this provide direct information on their preferences, but it also creates an informed public that begins to have some perception of the difficult choice, the difficult design issues, the highway team is trying to deal with.

We are concerned not with an evaluation method for its own sake but an evaluation method whose basic objective is to achieve substantial agreement on a course of action. The real issue is: Can we develop some kind of solution behind which we can mobilize support in the community in order to get something done?

Evaluation can be a very positive force in the way it catalyzes and drives the design process. Evaluation can help to pinpoint the crucial trade-offs and the issues of equity—which groups are being hurt in order to benefit others—as well as trying to stimulate the search for imaginative solutions. Evaluation should also serve to provide a basis for negotiation among the interest groups affected. It should allow us to find that range of options around which negotiation can most fruitfully take place. It should allow us to explore how much we can provide in compensation. It should allow us to get participation of those affected directly in the process of reaching an agreement....And, it should produce a ranking over the alternatives when we need one.

We have a list of all the interest groups in the community who might be potentially affected. For each interest group we try to identify each possible way in which that interest group might be affected—each impact type. We try to identify for each alternative action what its impacts will be on each of the groups in the community. This then represents the basic information on which we need to operate with evaluation. The role of an evaluation technique now is to operate on the data represented in this impact matrix together with whatever value information we have. The objective is to produce a tentative or final ranking of the actions plus an identification of the crucial issues.

What we need are a series of manuals and techniques. A first group of orientation manuals could include discussion of case studies of highway location problems and the solutions that have been developed; checklists of design features that impact on environmental values; checklists of the environmental values that might be impacted by locations; and training aides to help sensitize the engineers and planners to these issues in this context.

A second type of manual would describe community interaction techniques: Techniques for trying to identify the different interest groups in the community; techniques for making inferences about values based on a whole variety of social science-behavioral

science research techniques; techniques for displaying information to the community in ways that communicate to the community what the location team is concerned about as well as help to clarify the choice issues to the community.

The third manual would describe what we call location team strategy: How the location team, for example, might initially go into a community for a while just trying to get a feel for the local issues. After background study the team could begin developing alternative designs, not so much as final solutions but to have something to talk about to different groups in the community, to get their reactions, to see what people might prefer—and not prefer—by being able to present explicit alternatives to them. The third phase of strategy might be to try to change details of designs in a negotiating process, to come up with new joint development packages as the location team acts positively to produce an agreement among the diverse community interests.

I think it is very clear that there is a wide variety of techniques for getting various kinds of direct and indirect expression of preferences. What is important from the point of view of the pragmatic engineer is not statements of abstract values but statements of values sufficiently clear for the engineer to be able to predict the response of an individual or group to a small number of alternatives. The kind of approach needed is not a single survey technique or a single intensive interview technique. Instead it involves a substantial portion of the location team, whose role it is to interact with the community, continuously using a wide variety of formal and informal techniques, trying to get information about peoples' preferences and needs in the context of a general understanding of the community, as well as being able to translate that general understanding into specific operational indications. Then the location and design team—people generating alternative alignments, joint development plans, and so forth—can use these indications as a basis for reaching conclusions.

Appendix

Bibliography

This brief bibliography is a sampling of materials—some general, some case studies, some methodological—that relate planning to goals, or that provide a framework in which goals can be evaluated. Most of these articles are short and many may be regarded only as introductory to a further investigation of this vital subject.

A search of the literature reveals that the concept and importance of individual and community values have been recognized by many practitioners of planning for some time. This listing is provided as an aid to those who may be interested in further study of community values, but is not intended to represent the entire literature in the subject area.

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Under the terms of its Congressional charter, the Academy is also called upon to act as an official—yet independent—adviser to the Federal Government in any matter of science and technology. This provision accounts for the close ties that have always existed between the Academy and the Government, although the Academy is not a governmental agency and its activities are not limited to those on behalf of the Government.

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Supported by private and public contributions, grants, and contracts, and voluntary contributions of time and effort by several thousand of the nation's leading scientists and engineers, the Academies and their Research Council thus work to serve the national interest, to foster the sound development of science and engineering, and to promote their effective application for the benefit of society.

The DIVISION OF ENGINEERING is one of the eight major Divisions into which the National Research Council is organized for the conduct of its work. Its membership includes representatives of the nation's leading technical societies as well as a number of members-at-large. Its Chairman is appointed by the Council of the Academy of Sciences upon nomination by the Council of the Academy of Engineering.

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