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SOCIAL AND ENVIRONMENTAL POLICIES
FOR TRANSPORTATION IN THE 1970'S

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In this short paper I will base my view of desirable urban transportation policies on the present environmental and social deficiencies of transportation systems and on the potential roles and benefits of transportation systems in the future urban environment.¹

These concerns might be summarized as four major sets of goals -- goals which have been the subject of much talk in recent years, but relatively little action. The first two deal with the problems of the traveller, the last two address themselves to those in the impacted environment of transportation systems.

- 1 - Spreading transportation service to deprived population groups;
- 2 - Increasing the choice and quality of travel for the whole population;
- 3 - Eliminating or reducing the negative impacts of transportation systems on the social and physical environment;
- 4 - Contributing to environmental quality through transportation planning.

1. Spreading Transportation Service to Deprived Population Groups.

The transportation needs of the poor and the aged are now the subject of an increasing number of studies and a few experiments, notably the Watts experiment. These studies have found that the transportation problems of the deprived groups are numerous and reach into all aspects of transportation. The lack of a particular transit connection, the distance to be travelled, the fear of waiting at a bus stop, a feeling of "lostness" in the transportation system, the height of steps on buses

are among the many problems mentioned (Carp, 1970). Some of these can be resolved by the provision of new systems, often they will require the modification of existing systems. Software systems may be more important than hardware systems. The solutions will be complex, and often of an evolutionary managerial nature.

There are other neglected groups besides the poor and aged: the physically handicapped and poor in health, children and teenagers in suburban areas who cannot drive cars, strangers to the city, especially non-English speaking immigrants and tourists, those who by personality live in fear, need privacy, or are esthetically sensitive, those who travel in families or large groups. These and other groups may rightly demand equal travel rights in the coming years.

Suggested Policies:

a. Ways of ensuring that there be a systematic concern for the "left-outs" must be found. A review at the national level of the characteristic transportation needs and problems of all potentially deprived traveller groups should be carried out with the intention of identifying gaps in knowledge and with developing criteria for the successful transportation of the deprived. This review should be summarized in one or several reports on each deprived group. It should be updated as new research findings come in, and should be used to evaluate future investments.

b. At the national level, the Department of Transportation might acknowledge and cooperate much more with the consumer and citizen organizations who represent various deprived groups, encouraging them to identify their transportation needs.

c. A systematic effort to identify transportation programs, components and systems that would help the poor, handicapped, and

otherwise deprived should be undertaken at the national level. While the problems of the deprived are multifarious, the solutions to their problems are likely to be even more varied, ranging from the redesign of buses to accommodate the handicapped, to guidelines for sign systems, from various forms of fare subsidy, to dual mode personal transit systems.

d. In metropolitan and rural areas there has been little systematic assessment of the transportation needs of the deprived. Since conditions vary in each part of the country, model metropolitan surveys aimed at identifying the transportation problems of deprived groups should be developed by DOT and should be made mandatory for regional and local transportation agencies. Financial support for these surveys would be necessary.

e. A Social Report, similar to the environmental reports required by the National Environmental Policy Act should be required of every transportation project. Such a report should include an assessment of whether the project will aid or further deprive various designated populations. It should be reviewed by competent professionals who represent the concerns of deprived groups. This would have to be done within DOT, and a special division or office might be designated to take on this job.

f. Allocations of DOT investment to transportation programs, projects and research should consider the deprived clientele as a top priority. The emphasis should always be on desirable service rather than a particular technology.

Experiments should be carried out on a larger scale than in Watts and should be willing to consider any alternatives including the donation of vehicles if this is likely to increase job opportunity. Experimental programs might need to approach the problem through several

agencies, private and public, transit and highway, manufacturers and developers, since transportation systems are created in such fragmentary ways. Longitudinal monitoring of such experiments and clear criteria for success will be necessary to back them up.

2. Increasing the Choice and Quality of Travel for All

Transportation planning has habitually taken a narrow view of what travel is all about. The expressed concerns of transportation planning have been geared to moving the traveller from origin to destination in the cheapest and most convenient way. The reality is only too often one of competing transport modes fighting to maintain their empires by capturing their share of the travelling public. The battles of the modal split still appear to dominate transportation planning -- and research, and the numbers of travellers on any system are taken as the sole symbol of its success.

As an instance of the dominance of user behavior as the sole criterion for system assessment, consider the London Traffic Survey of a few years ago. Fifty thousand interviews were administered to estimate present and expected travel patterns. No questions on traveller satisfaction were asked (Thompson, 1970). This is not atypical. User satisfaction is either assumed or ignored. So long as he travels on the system, he has done his bit.

Two criteria that are surprisingly neglected in current transportation planning are traveller satisfaction and value to society.

Commuter travel in the United States is seldom an enjoyable activity. It can be unsafe, frightening, stressful, tiring, uncomfortable, disorienting, monotonous, dirty, overstimulating, trivial, dominating, depressing, and more. I can think of only a few urban freeways, and

almost no transit systems or arterial streets in this country which possess pleasurable qualities during rush hour. A few exotic forms of transport like ferries, cable cars, and minitrains are still enjoyable, Urban freeways feel dangerous, subways are gloomy and frightening, buses are noisy and jerky, arterial streets are a mess. This is a purely subjective and deliberately provocative judgment, but the little evidence we have from attitudinal surveys seems to bear it out. The fact is that we do not know. No profound or widespread assessment of the quality of a metropolitan transportation system has to my knowledge ever been carried out. We are relatively ignorant of the perceived quality of service and quality deficiencies of our transportation systems. It is clear however that we have a long way to go before the present transportation systems are safe, convenient, comfortable, clean, pleasant, interesting, civilized forms of travel.

Travel plays many roles beyond moving a person from one place to another, although we know little about those roles. Travel is an escape from the world of home and of work; travel can be a rest from more disciplined activities; travel can be the time to meet people or the time for privacy. It can be a time to plan the day's work, or a time to sleep it off. Travel can be an exciting adventure, or a relaxing hobby. It can be an education. For many, the commute is the only time they see other people or the city or have contact with the natural environment. Travel can be seen as a psycho-sociological event with a temporal course (Craik, 1970). No systematic research has been carried out on the potential values of travel.

Travel should also make a contribution to the general problems and aspirations of a democratic society. Equality of travel opportunity should clearly be a national transportation goal, but there are other

societal functions that transportation systems might perform. Transportation systems can affect the physical and perhaps mental health of the population. The diminution of walking is an obvious instance. Transportation also performs a social function bringing together or further fragmenting the various groups in society. Before the automobile, the street was a meeting place. It was common ground and neutral territory, a place where major events were celebrated. Since the automobile, the street has become one more contributor to isolation in society. Meanwhile, the automobile may have increased the number of personal friendships. Again, we have no indicators of the effects of transportation systems on social networks or social cohesion.

There may be other values of transportation systems that benefit society. The educational value of transportation systems may reside in the degree to which travellers comprehend the structure and meaning of cities and society, and in the degrees to which they encourage democratic values and responses -- such as tolerance, freedom, and feelings of personal individuality.

Factors like these are intangible and elusive, yet no less important for that. Society cannot depend on user satisfaction to assess these values. It must develop indicators of its own health.

Suggested Policies:

a. This broader function of transportation suggests that other criteria than economics, accessibility, traffic function, safety, or ridership be included in project and system evaluation. The identification of travel values, many of them latent or emergent, is the task of more careful research than the usual attitudinal survey. A research effort to uncover the whole array of present and emergent traveller values and their incidence among various population groups should be

launched. These could then be converted into quality criteria for transportation systems. Quality criteria should then be built into the required environmental and social reports on transportation proposals (Appleyard et al., 1968). Such a "civilized" view of the role of transportation may bring into question criteria that are presently taken for granted, e.g., that congestion is always a negative factor, that speed, growth and mobility are always positive.

b. The restoration of neglected systems should be considered. Systems that have not met efficiency criteria have fallen by the wayside in our headlong rush towards mobility. The Department of Transportation should take a second look at all these systems and reconsider their potential value. For example, in the interests of national health alone, the need for walking and cycling systems should be reassessed, and some reallocation of investment in their direction should be made immediately.

The lot of the pedestrian in the American city is not an enviable one yet a recent study in San Francisco found that between two-thirds and three-quarters of those over sixty must walk to get their groceries. By night the pedestrian travels at his peril along poorly lit streets; by day, in suburban areas, he is suspect. He trips over decaying sidewalks, he risks his life to cross the street and parking lot, he picks his way through the concrete caverns of parking garages, he is attacked by fumes and noise, he freezes at bus stops, he bakes on asphalt wastes, there are no benches on which to rest. And still his environment continues to decline, the sidewalks are narrowed or eliminated to accommodate more traffic, garages and parking lots grow larger, trees are cut down. The development of safe, well-lit, continuously surfaced, ample,

pleasant and agreeable pedestrian path systems with adequate resting places and assistance vehicles should be a national transportation goal in the 1970's.

Cycling, a transportation system which is available to youngsters of all ages, should also be considered a priority transport system, since it allows a wide range of travel for many groups in the city. Safe, continuous, weather-protected cycling networks should also be the subject of experiment. If there were more continuous auto-free path systems, other forms of recreational travel such as horse-back riding and cross-city skiing (as occurs in Oslo) could be contemplated. Other older systems -- tramcars, cable cars, jitneys -- appear to be ripe for resurrection. In the many situations where cities are on water, ferry systems might become as popular again as they are now in San Francisco and Seattle.

c. The rehabilitation of other systems to create more dignified travel environments should be another priority. Perhaps the most seriously neglected system is that of the arterial streets. These streets have been in the hands of impoverished city departments for years, and everywhere they have created a blight on travel and on the urban environment. They are poorly maintained, lined with indiscriminate curb cuts, multifarious and disjunctive uses, parking lots, signs, and disorderly arrays of street furniture. They have been the prime target of conservationists and, although some have a brash excitement of their own, most are dull, tedious, depressing. The rehabilitation of arterial streets should become a major transportation program in the 1970's (Owen, 1970).

The same can be said to a lesser but still significant degree for many of the freeways constructed over the last ten years. During the massive freeway construction program of the 1950's and '60's, many

mistakes were made. This was to be expected, but few attempts to remedy them have come forth. We are too preoccupied with building new ones. A freeway renewal program would evaluate the quality of existing urban freeways, with the intent of eliminating danger spots, improving orientation, and the appearance of signs and street furniture, of landscaping, guardrails, and side walls. Views which have been unwittingly blocked, for instance on the older bridges, should be opened up.

There are other systems that could benefit from rehabilitation. The subway systems, many of which are a national disgrace, should not be forgotten. Neither should we forget country roads. The Scenic Roads program was oriented to the building of new scenic roads, rather than to the care of existing roads, a likely way of destroying the very scenic qualities that were to be revealed.

I have emphasized the renovation and resurrection of old systems because too much attention is paid to new systems, too little to that which we have. The build-at-all-costs syndrome is one of the main reasons why transportation planning is unpopular today.

d. New technologies which offer multi-functional qualities of service are of course still worth exploring. Demand-actuated mini-bus systems, people-movers of various kinds, designs to reduce absolute reliance on automobile travel look promising. Systems that allow a high degree of personal control, choice and convenience, without deleterious impacts on the environment should be encouraged. Some high-speed automated highway systems may satisfy this set of criteria. Techniques of monitoring and programming existing systems to improve their performance have also not been sufficiently explored.

3. Eliminating or Reducing the Social and Environmental Impact of Transportation Systems

During the last five years protests from the public have halted transportation projects in many parts of the country. The motivations of protesters have been socially based, environmentally based or both. In response to these protests the Department of Transportation began to show an increased concern for community values. Conferences were called, the NCHRB financed research projects aimed at identifying community values. Transportation-corridor planning projects and joint-design teams were initiated.

Since the passing of the National Environmental Policy Act in 1969, the environmental impact of transportation systems has become a predominant concern. At last, environmental impacts are to be a matter for systematic assessment. Inevitably the quality of impact reports is very uneven and primitive, but, through study groups like the Environmental Guidelines Workshop called by the Highway Research Board in July 1971, and the efforts being made by the FHWA, impact studies are likely to improve. Greater cooperation with other agencies concerned with environmental impact could benefit this effort.

While it is gratifying to see that the environmental impact of transportation projects and systems will finally be assessed, there is a danger that the social impacts may be overridden or forgotten in the enthusiasm for environmental concerns. The environment has more powerful defenders than have low-income neighborhoods, and in many cases it is easier to assess impacts on the natural environment than the social environment, since it is less obviously adaptive than a human population. The scars of erosion, or the pollution of streams may be easier to discern than disruptions in community life. It is essential that

transportation agencies assess social impacts such as losses in housing, jobs, job opportunities, friendship patterns, neighborhood functioning, and changes in density, heterogeneity, and mobility. Hence my earlier suggestion that Social Reports as distinct from Environmental Reports might be required of each transportation project.

Neglected too are the more indirect secondary and system impacts of transportation facilities. The primary impacts of transportation channels and facilities are often immediate, visible and identifiable; the secondary impacts -- the traffic and development generated by their presence -- and system-wide impacts -- on the form and growth of metropolitan areas over the long term -- are complex and elusive yet may be more important.

Suggested Policies:

a. Proper attention to social and environmental factors requires radical changes in the whole process of transportation planning. These factors must be considered right from the beginning of the planning process -- from the system level down -- if they are to be adequately recognized. They cannot be considered in the last phases of the process, as the "frosting" on the engineering plans. This shift of social and environmental concerns from the end to the beginning of the transportation planning process is a fundamental and necessary change. The Department of Transportation should ensure that this process is restructured throughout all its divisions and through all state and local agencies which it funds.

b. The "opening-up" of the planning process to include representatives of impacted populations and environments is also essential. Various research groups have proposed ways of restructuring the transportation planning process for better citizen participation (e.g. Manheim,

1970.) Various techniques should be experimented with and monitored by state agencies with encouragement from DOT, always with the concern that citizen participation be real rather than token (Arnstein, 1969). Social, environmental and citizen advisory groups to transportation projects should be mandatory and in certain cases have veto powers. Although this may seem to be asking for problems, advisory groups usually perform facilitating functions both for planning agencies and the public.

c. Besides a restructuring of the transportation planning process, substantive knowledge in the methods of comprehensive social and environmental assessment will be necessary. The "state of the art" of impact studies is embryonic to say the least. Now is the time, while methods are forming, for a crash effort to develop a system of mandatory or advisory guidelines for transportation agencies and consultants to adopt in their impact studies. Guidelines should include:

- i. a checklist of possible community, social and environmental values.
- ii. a checklist of possible social, psychological, physical and natural impacts.
- iii. methods of obtaining social and environmental information by which to assess and predict the consequences of impacts, including the relevant natural and social science experts, data sources, field survey methods and sample questionnaires.
- iv. methods of recording, simulating and communicating such information for optimal public understanding.
- v. The setting of social and environmental performance standards and guidelines which transportation facilities should meet.

vi. the identification of transportation system components and actions which create impacts.

vii. the identification of methods of controlling such impacts.

These guidelines should emphasize specificity and should aim for quantifiable indicators of environmental and social quality. They should then be included in cost-benefit analyses of alternative programs.

Guidelines should be couched at different levels of sophistication, and should be well-illustrated and comprehensible to the professional and the educated layman.

d. DOT should encourage inter-agency cooperation at national, state and local levels to develop better and more comprehensive assessments of environmental and social impact. EPA, H.U.D., U.S.G.S., the U.S. Corps of Engineers and other agencies are all engaged in efforts to deal with environmental impact problems. At the state and local levels, if comprehensive planning as occurred during the '50's and '60's is no longer funded, the transportation agencies will have to cooperate closely with all other agencies if system-wide impacts are to be assessed and controlled.

e. In the short run, certain cautionary policies might be adopted by DOT.

i. if the impact of alternative transportation facilities on the social or physical environment is in dispute, then the "least impact" alternative -- if that can be identified -- should be adopted.

ii. "no-construction" should always be considered among the alternatives considered in transportation planning.

f. Efforts to expand the responsibility of transportation agencies over the primary impact zone should be made, and sufficient

allocations to support adequate relocation and rehabilitation in those areas should be mandatory. Such plans must be worked out in close collaboration with city and local agencies, and community groups and control of funding should probably be in the hands of the local community.

g. In the long run a successful reorientation of transportation planning will depend on the presence of social and environmental experts at all levels within transportation agencies as well as the re-education of transportation engineers and planners to understand social and environmental issues.

4. Contributing to the Quality of the Surrounding Environment

"Impact," the most commonly used term to describe the relation between transportation and its environment, implies a negative consequence. Transportation systems should be viewed also as potential benefactors to their surroundings.

If indeed there were sufficient funds to build good new housing at rents within their resources for those displaced by freeways, then freeways might be more welcome. These and other proposals for replacing the equivalent facilities or open spaces removed or damaged by highways have been proposed and occasionally accepted. Other ideas for air-rights development, and the broader planning of transportation corridors have also been proposed. If transportation agencies really broadened their viewpoints and capabilities, there would be strong arguments for their engaging in comprehensive urban planning, since the resources of other planning agencies continue to be minimal in nature. But the low credibility of transportation agencies in the eyes of the public may

prevent this substitution strategy from working until the public regains confidence in the transportation establishment.

Suggested Policies:

a. Transportation agencies should be participating in broader regional and metropolitan planning agencies. Such agencies should include regional highway, transit, airport, and port agencies, and they should be oriented towards region-wide transportation planning that optimizes the social, environmental and land use patterns of metropolitan areas.

b. Multi-modal corridor planning in close collaboration with cities and citizen groups should be initiated in all areas where transportation facilities are to be built. Even those already planned should be reassessed unless contract commitments have already been made.

Multi-modal planning would start with the transportation needs of the corridor without any preconceptions about modal solutions. Every modal alternative including the "no-construction" alternative would be considered. Such a planning method is now being proposed in California by the State Division of Highways. This should not actually be the concern of a single agency, but if 701 Comprehensive Planning Programs are to be eliminated in the future, transportation agencies may be the only agencies with adequate funding for comprehensive local planning -- not an optimal situation.

Conclusion

The foregoing discussion reflects a revolution that is beginning to take place in transportation planning and which will accelerate in the coming years. The Department of Transportation will have to move quickly to keep up with the pace of events.

Many of these changes demand not merely the adoption of new policies, but a restructuring of the basic concepts and values of transportation planning; ways of thinking that it may be almost impossible for many to adopt without re-education. Let me summarize some of these changes.

First, transportation must be seen as a service rather than a commodity (Webber, 1971). Too many in transportation planning are "locked in" conceptually to a system or a technology -- whether it be freeway, bus, transit or automated highway -- as the solution to the transportation problem. Too many have been trained only for the planning and construction of one product, and their viewpoint dominates transportation planning. Yet transportation should be a public service. The criteria for the success of transportation systems should be user- rather than supplier-oriented, problem-oriented as much as solution-oriented. Success should be measured in degrees of satisfaction and numbers satisfied rather than in numbers of miles built. There should be as much emphasis on management operations and incremental improvement as on the invention of new technological systems.

Secondary transportation systems should be seen as complementary rather than competitive. Yet transportation planning is characterized by rival systems aiming for permanence and/or profit. It is depressing and frustrating to find the highway, BART, and bus transit agencies in the Bay Area spurred on by press and public vying for ridership without any view of the overall public benefit. Multi-modal metropolitan and local transportation agencies appear to be essential to the resolution of such problems.

Thirdly, transportation planning must be multi-functional in nature. The engineering profession has a style of operating that

emphasizes specifics and products. It performs extremely well in the planning and construction of transportation facilities, and in the more quantifiable indicators of transportation success. Traditional engineering concepts are unable, however, to handle subtle and human problems such as those of social values in a pluralistic society, of environmental values based on the human psyche, or of the natural ecology. Transportation agencies have therefore begun to take on men trained in the social and behavioral sciences and in the design fields, but these are in a small minority. Change has taken place in the top echelons of DOT, and among those in state agencies who have to face the public at public hearings, but it is doubtful whether the majority of those in transportation agencies give more than token recognition to this broadening of concerns.

Finally, the transportation planning process has to be more open to public participation than the present closed professional system of planning. It must be clear by now that the concept of value-free technicians making decisions on behalf of the public is a myth. Every transportation standard or decision involves values and usually benefits some of the public while hurting others. Every decision is therefore a social decision -- even if it be so apparently technical as the design speed or curvature of a highway.

The transportation establishment has talked a great deal about public participation in transportation planning, and some progress has been made. But there is all the difference in the world between token participation aimed at selling the public a product, and a genuine effort to find out the public's needs and desires. Allowing the public access to the information on which decisions are based, and participation in decisions even to the point of veto involves a sacrifice of power that

cannot be made with good feelings unless the public is genuinely viewed as the clientele of the transportation agency.

These are serious problems, difficult to solve. They involve a radical change in the attitudes of a national industry. Many efforts to resolve these problems are underway. The Department of Transportation was itself structured to encourage the coordination of multi-modal planning, the latest legislation demands specific procedures which broaden the considerations of transportation planning. Here are some concluding suggestions.

1. A major effort should be made to create and finance multi-modal transportation agencies related to or included within regional planning agencies. The relationship between such agencies will vary with the local situation.

2. A major research and planning effort to assess the quality of transportation in metropolitan and rural areas should be carried out. Such an effort should begin with a proposed system of social and environmental indicators by which transportation systems might be evaluated.

3. Planning and research RFP's should be oriented to the assessment of transportation demand and the provision of service rather than the planning of facilities. The possibility of non-transportation solutions to problems should be considered among alternative recommendations.

4. The hiring of environmental and social professionals, environmental planners, resource planners, landscape planners, urban designers, economists, sociologists, psychologists, geologists, ecologists and others as full-time staff members at all levels in transportation agencies should be actively pursued and carefully organized.

5. A major re-education program for engineers, planners, and administrators in DOT and in state and local transportation agencies

should be proposed. In-house training programs to educate all personnel in environmental and social matters are needed immediately. A sabbatical system whereby every seven years personnel could take a leave of absence for refresher courses should also be instituted. This might allow more upward mobility within these agencies, since returnees could be moved up to different jobs and others would take their place. Such a program would also require that universities and colleges reorient their academic or extension programs towards the older professional.

6. A closer collaboration between schools of engineering and those of planning, environmental design, natural resources and the social sciences is urgently needed. Service courses in environmental and social planning, science and design for engineering students should be provided, and they should be encouraged to take them. The new emphasis on the behavioral and natural sciences in the design and planning fields should take place also in transportation engineering. Such programs should of course be two-way to encourage those related professions and disciplines to become involved in transportation problems. Educational programs of this kind should be funded by DOT through multi-disciplinary educational and research support.

FOOTNOTES

1. Some of the ideas in this paper came from discussions with Mel Webber, Frances Carp, Richard Meier, Martin Krieger, Chester McGuire, Robert Burco, Tom Dickert, and graduate students at U.C. Berkeley. The formulations are my own.

REFERENCES

- Appleyard, D., and R. Okamoto. "Environmental Criteria for Ideal Transportation Systems," in Barton-Aschman Associates Guidelines for Future Transportation Systems for U.S. Dept. of Housing and Urban Development, 1968.
- Arnstein, S. R. "A Ladder of Citizen Participation," JAIP 35, pp. 216-224, July 1969.
- Carp, F. M. "Correlates of Mobility among Retired Persons," E.D.R.A.2 Conference Proceedings, Pittsburgh, 1970.
- Craik, K. "Transportation and the Person," Journal of High Speed Ground Transportation, 1970.
- Manheim, M. L. "The Impact of Highways Upon Environmental Values," Urban Systems Laboratory, M.I.T., Cambridge, Mass.
- Thompson, J. M. Motorways in London, London Amenity and Transport Association, Andworth and Co., London, 1970.
- Webber, M. M. "Alternative Styles for Citizen Participation in Transport Planning," Highway Research Record, Number 356, 1971.