Challenges to the Future of Urban Transportation Planning

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The environment for urban transportation planning continues to change. Although a large commitment of resources is being made to this field, the future of the profession and its products may increasingly depend on the perceptions of the cost effectiveness of planning on the part of local decision makers. Scarce resources and relaxation of federal planning requirements accentuate this challenge. Some key issues and choices facing urban transportation planning and planners in the 1980s are identified. Among these are the selection of the most appropriate role for analytic models, the choice of problems to solve and solutions to test, the relative role of creativity, the need to understand the implementation process, and the choice of an appropriate style for planning. The need for more introspection, self-criticism, methodological variation, and concern about ethical choices among problems, solutions, and tools is emphasized.

A number of important and changing factors are likely to influence the future market for, and characteristics of, urban transportation planning. Although the field is young with a tradition of change, adaptation, and advancement, the forces affecting transportation planners in the next 20 years are likely to present new and particularly difficult challenges. In this paper, some of the key issues transportation planners are likely to face are outlined and some of the choices they must begin to make are discussed. Rather than offering solutions, the intent is to stimulate introspection, debate, and action.

SCARCE RESOURCES AND COST EFFECTIVENESS OF PLANNING

One of the most influential factors in determining the course of urban transportation planning in the coming decades will be restrictions in real magnitudes of resources available to operate, maintain, and improve urban transportation systems. These restrictions derive from increasing unit costs of providing transportation, depletion of natural resources, economic decline in some areas, and pressures to allocate public (and private) funds to competing uses. Declining economies in some regions will, at the same time, place additional pressure on transportation systems to perform so as to attract new jobs and enhance the vitality of cities. These are, by and large, conflicting pressures that will be difficult to resolve. The need (though not necessarily the demand) for sharp analysis in support of resource allocation choices is likely to increase as demands on those resources expand and the resources themselves contract. This may call for more, and certainly improved, transportation planning. How can this challenge be met? Is there really a market for (better) planning products?

This situation will be made more difficult by the strong likelihood of a reduction in federal involvement in transportation planning--both a decrease in monetary support for planning and a softening of regulatory requirements for planning products. Some feel that federal planning requirements are a major reason for the continued existence of transportation planning as a profession (1). If Washington has less need for the planner's services, will Denver, Chicago, or other smaller communities still see the need for them? Will local governments vote to buy with their scarce dollars transportation planning in what may be an emerging free market for the transportation planner's work? How can the transportation planner compete in this marketplace?

Presumably, the ability of transportation planners to compete will be at least partly related to the perceived cost effectiveness of their products. Keefer (2) estimates that federal support for metropolitan planning organizations amounts to about $150 million/year; accounting for local cost-sharing and other types of urban transportation planning activities will surely increase this to more than $200 million/year or about $0.50/person. This seems little enough on the surface, and Keefer argues that it is becoming too little.

But cost alone is not conclusive; what has been, and can be, the effectiveness of transportation planning? There is room for real doubt concerning this effectiveness, despite--and perhaps because of--the stacks of written reports, theories, and methods that planners have produced. How do clients measure the effectiveness of transportation planners? Client views are probably linked to the real actions that are implemented based on the planner's work as well as the relative success of those actions. These concepts present difficult evaluation problems, for it is nearly impossible to untangle the web of factors that affect project implementation to determine the credit that should be given to transportation planners. The relative success of a project is also hard to judge because clients can have only a limited notion of what the world would be like without the transportation changes that result.

Ideally, the effectiveness of urban transportation planning should not be measured merely in terms of the implementation of physical actions (3). Transportation planners collect and assemble timely data bases that are directly useful to some and the subject of further analysis by others. We derive and disseminate descriptions of key relations--e.g., between fares and ridership, level of service and development, and costs and prices--that provide the background for choices large and small. Transportation planners warn of errors, justify preferred actions, and sometimes directly influence public policy. Increasingly we also market new options and make the case for preserving essential services. The diversity of the work of urban transportation planning is both our strength and our weakness. It appears that we accomplish a lot, but what we really contribute is often invisible not only to decision makers but also to ourselves. This makes it difficult to characterize the effectiveness of transportation planning and a real challenge to justify its survival.

Some planners believe, based on limited empirical evidence, that there is a serious credibility gap between transportation planning and transportation reality. Many of our products have failed to reach implementation; many are complex, obscure, and unresponsive to the problems that are of importance to communities. The latter situation, of course, is often because we are charged with, or take charge of, problems that we cannot solve with any feasible government action (4). Should we limit our agenda and thus our image and influence, or should we be more daring and aggressive?

SEARCHING FOR THE CLIENT

Delivering an effective product mix depends on the ability of transportation planners to identify, communicate with, and perhaps influence decision makers. Yet our success has been more limited than we might prefer. Are there alternative styles, strategies, or tools for transferring ideas from planners to clients? Perhaps there are. Certainly, planners can deal with this issue only by recognizing it and addressing it as a major problem in transportation planning, not as a side issue or external effect to be worried about after the models have been implemented.

Part of the planning task is to find and understand the client. A product without a client--preferably a client who is ultimately satisfied--not only goes nowhere but foretells the extinction of the producer. Yet our clients are sometimes invisible or inaccessible to us. Traditional theories of planning refer to single decision makers and presume them to be willing and able to know everything. Yet rarely is there a single decision maker; in most situations, many actors are involved in each major action.

Ultimately, of course, the implementation and successful performance of planners' ideas depend on the atomistic choices of society as a whole--travelers, home buyers, developers, and entrepreneurs. Perhaps these are our ultimate clients, and it may well be insufficient to encompass their interests in transportation planning only by representing their behavior in disaggregate models. Seeing them as the clients of planning may lead us to plan differently. Garrison (5) develops a useful description of the tremendous power of the forces of the atomistic market and shows how, through the choice of convenient but inappropriate change variables, planners sometimes approach problems from the least promising perspectives.

The citizen participation movement has attempted to see society as client, but it has also shown society to be an extremely difficult client to engage in the planning process. Furthermore, an increasing number of political officials, despite federal regulations, resent and avoid direct citizen involvement, seeing their own role, derived from the principles of representative democracy, to be that of representing their constituents. There is a powerful jealousy that makes it difficult for planners to shift to this broader client group.

Elected, appointed, and "informal" officials are increasing in number as well, not only because of the multiplicity of government units but also because the complex interdependencies of modern government require many people to be involved and virtually demand delegation of powers. Chains of command and the flow of information and decision are often unclear, are sometimes unpredictable, and are rarely mirrored by organization charts. Who makes the choice about bus service cuts or highway priorities? Is it the mayor, the public works director, the city council or a councilman, the contractors, the mayor's uncle, or his political advisors? The answer is probably that it is each of these people or all of them--it depends.

So where are the points of leverage for transportation planning? What styles, products, methods, and recommendations will be most suited to each and all of these clients? Should we focus on the usefulness and use of our work, or should we concentrate on producing what we feel is the right product? How should we trade off [in the sense cited by Harris (6)] planning, in the classical terms of developing a dream of the future, and survival, which may be linked to power, influence, and saying the right thing in the view of our most potent clients?

Visionary, future-oriented planning seems to be feasible in some places at some times. The Daniel Burnhams of today exist, although it seems that many are in medium-sized, fast-growing cities whereas larger, stagnant communities often appear to be bound up in the politics of immediacy. This pattern is not surprising; coping with it surely demands major variations from place to place in what is called urban transportation planning.

These are generalities, descriptions of some broad issues and factors that will affect the future of urban transportation planning no matter what we do as a professional group. As individuals and as a group, however, we must address them, refining the key issues and exploring our options. No outcome will be right for all people, all contexts, and all times. Perhaps the best outcome of a reduced federal role in urban transportation planning will be a new freedom for local planners to tune their tactics to meet their own markets.

In the following section, these issues are made somewhat more specific in the hope of providing an agenda that can guide the personal and professional evolution of transportation planners in the next decades.

SPECIFIC ISSUES AFFECTING THE FUTURE

Role of Analytic Models

Forecasting models are an essential part of the transportation planning process. They enable the planner to anticipate key attributes of the future and to test the efficacy of proposed actions. During the past 30 years the profession has advanced to a point where it is impossible to think seriously about transportation planning without formal, predictive models. Yet some have argued that models have been substituted for thought and creativity (6). Forecasts based on narrow and often untested models are used not only to predict the future but also to define that future; forecasts can take on a life of their own and become self-fulfilling prophecies, almost independent of their desirability (7). Perhaps even worse, a flurry of complex models, often (and understandably) in error, can destroy the credibility of even the best and most useful predictions.

In the planning process, it is all too easy to forget about the limitations of models, to ignore the questionable assumptions on which they are based, and to apply them beyond their range of calibration and in contexts in which new and changing variables are likely to have an effect. Most model developers have a good understanding of such limitations; some model users do as well. What consumers of model-generated information know is less clear and perhaps more important.

It is common, of course, to be faced with important policy questions for which available models are inappropriate. Not responding to such questions is likely to be more damaging to the credibility of planning than using less-than-satisfactory models. Indeed, a desirable attribute of professionals is the willingness and ability to solve difficult problems with limited resources. But the skills for dealing with the limitations of forecasting models do not appear to be widespread within the transportation planning field, a situation that can be blamed both on the way planners are trained and on the opaqueness of the models.

All transportation planning models are inherently narrow, accounting for only some of the operative

quantitative variables, and are based on hypotheses about relationships, and the temporal stability of relationships, that have restricted and sometimes unknown validity. Our concept of problems and solutions often appears to be based on a similarly limited view of the world. Lindblom and Cohen (4) suggest that we often feel that we understand the problem and that it "belongs" to us, when in fact we only see (through models) pieces of the problem, the whole of which is on the agenda of (many) others. This narrowness distorts our responses to problems and can lead us to recommendations that are neither relevant nor effective. We have too long allowed method to determine problem and solution (5) instead of deriving appropriate methods based on a more realistic concept of need.

Greenberger (8) suggests something many of us already knew: models and model outputs are often less influential in decision-making processes than modelers themselves and the judgmental advice they provide. The implication may be that the best modelers do their learning and establish their credibility in model-building and exercising activities; only later does their advice, derived largely from judgment, become influential. To the extent that this is true, are there ways in which we should adapt our use of models in transportation planning? How do we trade off the face validity that comes from neat computer outputs and the merits of finely tuned judgment? How can we improve the quality and credibility of that judgment in a world where more and more people put their greatest faith in computer printouts based on mysterious theory and data?

Of course, models, like planners, are not truly objective. Buried within them are the biases of modelers' intuitions, limited understanding of relationships, and weaknesses of data. Overall biases due to broad, and not necessarily correct, perspectives on causal and control variables are extremely important in their effect on planning products. Models are not independent of modelers; plans are not independent of planners. Thus, our clients may have the not inconsiderable ability to choose their products by choosing the producers. The use of national econometric models in federal policymaking is a clear example of this (9). Models, and modelers, are selected to support the philosophy and policies of those in office, and countervailing models are kept at the ready by the loyal opposition. Whose perspective is correct is an unanswerable question. Because our different biases are less clear, the client's choice of planning professionals may only implicitly direct the outcome. Should this link be more explicit? How can we convey this notion to clients?

Using models is not planning, and assuming so is surely detrimental to the planning profession. Yet planning cannot be done without using models. How, in a strategic sense, can we make the best use of the tools we have created without letting the tools consume us? Establishing the appropriate balance will be an important challenge.

Choosing Problems and Solutions

The effectiveness of transportation planning implementation may be limited by the biases that affect us in the choice of solutions to problems. Our models, our training, and the control variables readily accessible to us may in some cases lead us to recommend actions that are either not implementable or not likely to solve the problem at hand. In many cases, the solutions we have tested were mandated by federal regulation or legislation. Are such solutions generally appropriate in all contexts? Is transportation system management, or light rail, or the high-occupancy-vehicle facility right for all communities? What opportunities exist for real, local creativity? How can the most desirable kind of local flexibility be achieved?

The notions of the atomistic marketplace may not be sufficiently well represented in planning work. Much money has gone into ridesharing, bus service improvements, and studies of fixed-guideway transit. Yet such approaches, at least in some situations, may ignore the operation of the all-powerful market process. Some evidence suggests that pricing may be the most effective path to achieving apparently desired modal shifts, particularly for the automobile mode. Yet such options seem to be rarely considered and more rarely implemented. Is it because we fail to see their relevance? Or is it because we as a society are not really willing to implement disincentives to achieve desired ends?

Perhaps more serious than these biases is the common tendency of our clients to use transportation to solve problems that have little to do with transportation. Fundamental problems of communities, including economic stagnation and decline, shifts in the intraregional location of productive activities, and deterioration of the physical plant of cities, may not be particularly amenable to change through transportation improvements. Furthermore, our understanding of the link between changes in transportation and such problems is at best incomplete. Yet our tools and actions are brought to bear because they exist, they attract resources, and they are visible and goal-directed and also because of the relative attractiveness of technological fixes compared with more direct means of achieving social and economic changes. How, through the planning approach, do we trade off our desire to serve and to survive and our need to be realistic in the promises we make? To a significant degree, our willingness to attack critical problems tangential to transportation must be tempered by ethical considerations of what can feasibly be achieved with planning tools and action variables.

The problems transportation planners try to solve, and often the solutions we study, do not always belong to us. When others define the problems, there are serious risks that expectations may be set unreasonably high and that we may never really be able to do the job assigned. Structuring our roles to fit into such contexts is especially difficult because an unwillingness to rise to the challenge may be viewed as a sign of ineffectiveness, although our actions themselves may ultimately prove ineffective.

Planning Versus Projection: The Role of Creativity

Harris' argument (6)--that too often planners eschew creativity (i.e., constructing a desirable, innovative future) in favor of tool-oriented planning that may only help to ensure that the future is like the past--still holds in some cases. The methods we use are closely tied to extrapolation of past relationships, conditions, and options. In a world where decision makers have a natural predilection for incrementalism (10) and for maintaining the status quo (11), do planners have any real options? Under what conditions can today's visionaries function? How much of what we are doing, and can do, is predetermined? Can we only survive by not changing, or are we 20th century dinosaurs without knowing it? What is the source of today's serious criticism of what we are doing in transportation planning?

Decision makers themselves, of course, carry a heavy share of the burden of incremental and extrapolative planning. How do we balance the desire to serve responsively and the value of providing early-

warning messages responsibly? When the market process is so influential, are there opportunities for change to which planning can contribute?

Understanding Implementation

Planning in the 1980s is much more decision-oriented than planning in the 1950s, focusing not just (or not at all) on 25-year blueprint plans, but on investment programming for the coming year. This is a healthy change because it means that we have become not only more realistic and practical but also more relevant and useful.

Yet in the construction of some of our planning products, it is not clear that we understand the process of implementation well enough. Who are the real decision makers? What form should our response to them take? We could justify the alternatives decision makers prefer a priori. Yet most power-brokers have narrow bases for establishing such preferences. How can we find this out and deal with it? The argument for this fixed-rail line or that new airport may be illogical and antithetical to other community goals. Is there a mechanism for communicating such advice? Can the planner use it and survive?

Planners employed by public agencies are often constrained from providing critical--sometimes self-critical--advice. To maintain their credibility and their jobs, they must usually support their political clients. Providing that support ethically, however, may demand that they oppose politically preferred actions. Here there may be a greater role for academics and professional organizations divorced from the actions of day-to-day politics. Such individuals and groups face an obligation to respond but to do so in an even-handed, balanced way. Accomplishing this without mixing in too much self-interest and self-aggrandizement will not be easy. Who watches the watchers?

Classical models of planning suggest that planners begin with a broad problem concept, refine that concept, and then define and test alternative solutions. Yet much evidence suggests that we actually begin with the choice of a tentative action and then work to justify (or reject) that choice. Is it a mystery why so many of the facilities implemented after the large-scale, comprehensive, continuing, and cooperative planning efforts of the 1950s and 1960s were already committed when the plans were being made? We cannot really claim 100 percent of the credit for decisions essentially made before our work began.

What approaches to planning are viable--and worthy of self-respect--under such conditions? Here, too, we must ask ourselves about the creative contents of such planning, which should serve to justify our classification as professionals.

Planning that is done after (tentative) decisions are made is not necessarily tainted, for under these circumstances we have a greater share of the decision makers' attention and the task we face is better defined. We must find ways to use these advantages to derive and communicate the most useful guidance to our clients.

Alternative Styles of Planning

Historically, planning concepts have been founded on the basis of the value-neutrality or objectivity of planning efforts. Yet the reality is much different. We function in a world of a multiplicity of public interests, where we increasingly realize that even the choices of data bases and models are not really neutral and that allocative plans have different consequences. Yet many planners, and especially engineering-oriented transportation planners, hold to this concept of objectivity. This leads either to a misleading description of what we do or to relatively neutral planning that is isolated and ineffective.

Surveys of practicing planners reinforce this notion and illustrate the range of styles planners adopt. Howe (12) reports that planners seem to place themselves in one of three categories: technicians, who hold tightly to value neutrality and focus on systematic methodology; politicians, whose main goal is implementation through advocacy in the political process; and hybrids, who mix these roles. Baum (13) emphasizes the merits of a slightly different hybrid role model, which is more entrepreneurial in nature. He underscores the importance of understanding and working within established organizations to achieve results. Baum's entrepreneurs broker solutions through institutions with their special knowledge of the institutions themselves.

Vasu (14) reports his own survey results and describes the conflicts between the classical notion of planning as rational and comprehensive and the (typically liberal) planner's view of multiple public interests and the value of advocacy. He emphasizes the planner's internal conflicts between the theory of planning and the reality of politics.

There is no correct style of planning. Adopted behavior is (and must be) determined by the context and the attributes of individual professionals. The match will rarely be perfect, and individuals will commonly experience role conflicts. Yet we need a better understanding of the links between outcome success (provision of information that is used in decisions and, perhaps, implementation of recommended actions) and planning style. Do today's methodologically rich transportation planners tend to be more oriented to value-neutral, classical planning? What price do we pay for this? What mixes of stylistic options are available to us as a professional group? What particular styles are most appropriate to us as individuals? What changes should we strive for in our sets of tools and our use of tools to take the best advantage of appropriate stylistic options?

As a profession and as individuals, we must think more explicitly about roles and styles, just as we think about models and methods, in order to make such choices. There is a need to expand research and dialog regarding alternative planning styles and their contexts and effectiveness. This will benefit practitioners and guide some planners as teachers in orienting their students so that they are not only prepared to calibrate multinomial logit models but are also able to decide when, where, and how to use them.

PLANNING THE FUTURE OF PLANNING

Urban transportation planning in the future must be more concerned with understanding the meaning of success: as a profession, transportation planners need to come to grips with the concept of the effectiveness--indeed, the cost effectiveness--of planning. In particular, we need to explore the relationships among planning impacts and styles, methods, and contextual characteristics so that we are better prepared to adapt our approaches to the needs of the environment and the constraints of available resources. This will require serious study and, importantly, serious dialog and debate in the profession. We need to achieve a more credible balance between the energy for meaningful research, presentation, and discussion devoted to analytic methods and that focused on other factors that af-

fect our success, including procedural, stylistic, and communications issues.

To accomplish this, transportation planners need to explore more powerful ways to understand and describe the effects--the successes and failures--of urban transportation planning. Case studies alone are useful but insufficient: too often those cases that are published are only the successes, and then an incomplete picture is often presented. We need more self-scrutiny and an improved conceptual framework for assessing what we are doing.

The profession needs, and is likely to get, greater flexibility in the choice of problems, solutions, tools, and methods. In a sense, it would be desirable to return individual and agency innovation to the level of the early 1960s, when a wide variety of new ideas was generated. It is not that those ideas were so valuable, though many were, but that we need to have and to use more individual freedom and creativity in the conduct of urban transportation planning.

The emerging attributes of the planning marketplace--more atomistic, less regulated, more budget-constrained, less neatly objective--are telling us to think more about what we do as transportation planners as well as how we do it. We can ignore these attributes or we can try to understand and respond to them. The immediate challenge is to clarify that understanding and develop the dimensions of sensible responses. We do not wish to "throw out the baby with the bath"; we have traditions and tools that provide a basis for a new beginning. To suggest how to make that new beginning for the 1980s, we need to think about where we have been and where we are going. There is no single right answer. The days of lockstep, methodologically invariant planning are probably numbered. We must now begin to spell out sets of promising options that respond to the changing environment while clarifying a reasonable role for ourselves.

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Statewide Transportation Planning in Minnesota

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Since its formation in 1976 as a multimodal agency, the Minnesota Department of Transportation (DOT) has modified its approach to statewide transportation planning in response to changes in society and transportation. The Minnesota DOT statewide transportation planning program, including the development of Minnesota's first state transportation plan in 1978, is described and evaluated. The description and evaluation are based on eight key elements: (a) being responsive to the public and the political process; (b) using mechanisms to structure and coordinate diverse planning activities; (c) conducting regular surveillance and evaluation of performance and impacts of existing (and past) transportation facilities and services; (d) providing timely response to information needs of top decision makers as they respond to changes and crises; (e) developing regularly updated long-range background forecasts; (f) providing an early warning system; (g) conducting sound, in-depth policy and planning analysis; and (h) providing means to implement the approved recommendations of longer-range, broad planning activities.

The Minnesota Department of Transportation (DOT), like other transportation agencies throughout the nation, has been buffeted by change. In responding to that change, the state has made modifications in how it approaches statewide transportation planning. The most fundamental change was the creation of the Minnesota DOT in 1976. The legislative charge to the Minnesota DOT to be a multimodal transportation agency required that it broaden its horizons from that of its predecessor modal agencies, examine all modes of transportation, and seek and encourage intermodal coordination in its statewide planning efforts. The purpose of this paper is to describe and evaluate the current statewide transportation planning efforts of the Minnesota DOT