Integrating Planning Theory in Graduate Transportation Education

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Based on current literature on transportation education and training, it is evident that transportation professionals need to have a basic knowledge of planning theory because the obligation to understand and apply planning theory has become pervasive in transportation planning, as it is practiced today and will be in the future. Information is presented about the goals of transportation education and the challenges facing educators in training high-quality professionals for the future. It is argued that one of the essential parts of the kit of a transportation professional's education should be a knowledge of substantive and procedural planning theory. Such knowledge will enable transportation professionals to become more involved with the political, social, and economic systems within which they operate, and enhance their chances of playing leadership roles in transportation. This paper discusses the contents of such a course and presents a topical course outline.

Transportation professionals need to study planning theory because the obligation to understand and apply planning theory has become pervasive in transportation engineering and planning. In their enthusiasm to acquire tangible tools and techniques, most transportation professionals lose sight of the need for the more synthetic skills of reasoning and conceptualization provided by the normative theories and concepts about the purpose and legitimate functioning of society, as expressed through laws, public policy, and political authority (*1*).

This paper examines the current and future directions in transportation planning and the need for transportation professionals to understand the important components of planning theory. The first section traces the attitudes and perceptions of the transportation professional in view of the changing environment. The second section investigates the following major dimensions of planning as it pertains to transportation: substantive theory, procedural theory, and planning doctrine. Finally, the paper discusses the contents of a course on planning theory and presents a topical course outline.

THE CHALLENGE

The urban transportation planning process is probably the foremost example throughout the world of the application (better in some countries than others) of the general concepts of planning. However, it must be noted that, although an informed public decision making process has been in place for at least two decades, based on the preparation, analysis, and evaluation of alternative plans, new challenges and changes have since occurred, making it necessary to take a fresh look at the connection between planning theory and practice (*2*).

Today, the biggest challenge facing transportation professionals in the United States is the rebuilding of the infrastructure and its expansion to serve future growth. For men and women who seek to be professionals in the transportation industry it is not enough to be just technically proficient. In addition, they must understand what it takes to manage large-scale systems, to succeed in the ambiguous world of politics, and especially to be able to make decisions that involve the allocation of limited resources (*3*).

An overall sense of the attitudes and perceptions of the profession is captured in the following conclusions reached in a special conference of the Transportation Research Board (TRB):

(1) The transportation professional faces significant challenges that will tax the technical, political, and managerial abilities of everyone involved. Although transportation education faces serious problems, these challenges should be viewed as a significant opportunity to redefine new directions for program development.

(2) It is almost certain that transportation professionals will face more change in the next 20 years than that which has occurred during the past 20.

(3) The transportation professional must have the ability to communicate effectively with the public, with professionals in other fields, and with elected officials (*4*).

Because the practice of transportation planning raises numerous questions closely connected with planning theory, it is essential that transportation professionals be capable of understanding and developing postures and arguments not only to guide their own independent decision-making responsibility, but also to assist other public officials and the general public to develop and clarify precise normative positions (*1*).

GOALS OF TRANSPORTATION EDUCATION

"The primary objective of transportation education is to prepare the student to enter practice as a transportation planner or engineer, which includes providing him/her with technical and quantitative skills required to carry out complex assignments, and a broad understanding of the social, economic,

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and political context within which he/she will work" (*5*). The latter part of the objective implies that students acquire definitional, substantive, procedural, and normative knowledge of planning. Yet very few graduate programs in transportation in this country require a student to take one mandatory course in planning theory.

Some topics in planning theory are marginally included in courses such as "Transportation Policy and Administration." Also a small percentage of transportation graduates take one or more courses in regional and city planning, where such courses are available. In such cases, a course in planning theory is sometimes included. Thus, the probability of a transportation graduate having taken a formal course in planning theory is rather remote.

There are some who argue that planning theory is, at best, a weak and irrelevant subject, and that there is little need for it. They insist that since theory is deeply embedded in professional practice, one can learn planning theory by doing it. There are severe limitations to this argument, particularly in view of the tremendous expansion in planning theory in recent years. A brief tour of planning theory as described in this paper will indicate the complexities of the subject. Surprisingly enough, it has been observed that those planners who consider themselves least explicitly involved in theory are likely to be the most bound into one.

THEORY, PRACTICE, AND PRAXIS

Theories, in general, provide explanations. Planning theory has to do with defining and understanding the contexts, practices, and processes of planning and how they have evolved from their respective historical and cultural bases. Theory feeds on practice, and practice feeds on theory. It is this cyclical relationship between theory and practice which is known as "praxis." It distinguishes itself from practice as a self-critical activity that recognizes that the external world, including the practitioner, is the product of normative interaction. For transportation planners this concept of praxis is particularly important because planning, unlike the pure sciences, is ultimately a prescriptive activity (*6*).

DIMENSIONS OF PLANNING

The practice of city and regional planning takes several forms, one component of which is transportation. Such practice is connected and in many ways dependent on procedural planning theory and regional planning doctrine. Doctrine, in turn, is fueled by substantive theories based on the social and environmental sciences. Procedural planning theory, planning doctrine, and substantive theories in planning feed on certain

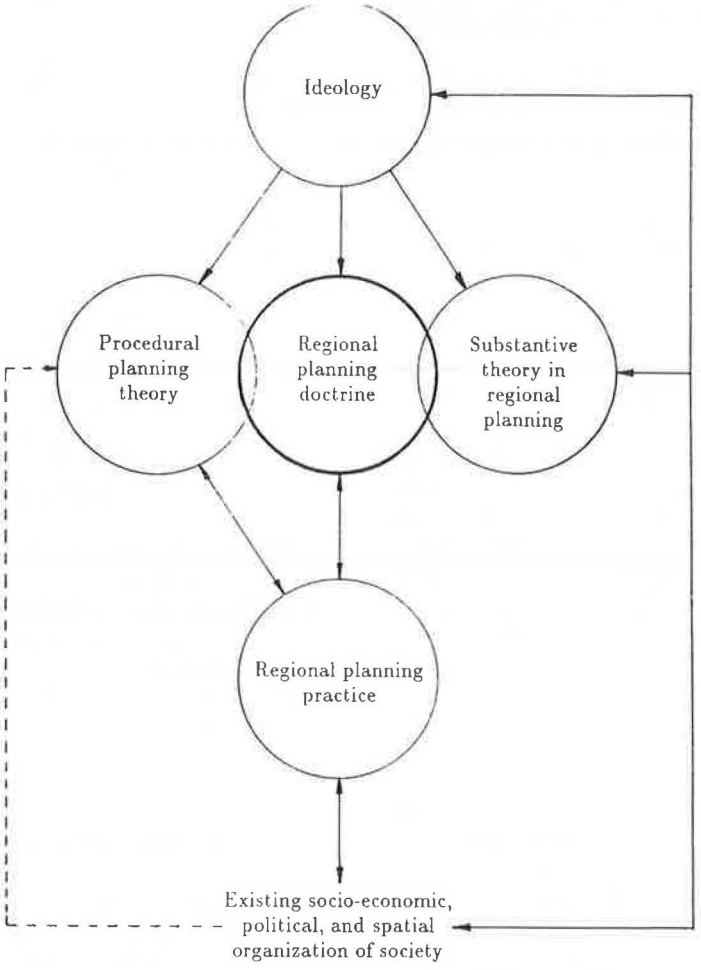

FIGURE 1 Principal dimensions of regional planning and their interrelations.

ideological assumptions. Figure 1 shows the internal relationships among the five major dimensions. Of these, at least three dimensions of planning are relevant to transportation engineers: planning doctrine, procedural planning theory, and substantive theory (*7*). According to the original concepts of planning doctrine, regional planning was considered to create conditions that would establish a harmonious relationship between human beings and nature. In the 1930s, planning doctrine was reinterpreted as the integrated development of natural resources for human use. River basin projects such as Tennessee Valley Authority, for example, were considered the most appropriate means for achieving this purpose. More recently, planning doctrine has come to be supported by what is generally known as regional science (*7*). Transportation planners need to have an overall idea of planning doctrine to be able to handle such questions as the following:

- Why have growth centers not grown the way they should have?
- Why has poverty continued to accumulate in cities?
- Why have inequalities remained ingrained as deeply as ever in the transportation field, in spite of conscious efforts made to the contrary?

Friedman and Weaver capture the ideas of doctrine thusly (*7*):

> Doctrine is the stock-in-trade of professional planners, the sum and substance of what they know and perpetrate upon the world. As such it serves not only to illuminate the practice of regional planning but to provide a focus from which the remaining dimensions of planning can be conveniently explored.

The substantive dimension is the work of geographers, economists, regional scientists, sociologists, and political scientists. Substantive theories refer to specific problems, such as rural development policies, theories of poverty, and energy policies (*7*).

The central questions answered by the substantive dimension concern the nature of the good or just society. There are various ways in which we may concern ourselves with this question. The first concern focuses on the meaning and function of the concepts characteristic of practical discourse (good, right, ought, must, etc.). The second concern is one of method. How do we determine what considerations are relevant, and in what way, in evaluating competing practical options? The third concern is that of application, that is, actually deciding on an option or policy. For instance, what actions or organizational forms are good or right (*8*)?

One area that is of immediate importance in planning theory and one which impinges heavily on transportation planning is the theory of justice. The concept of justice as fairness or as equity has been discussed quite frequently in the last decade (*9, 10*). Problems connected with the distribution of funding among regions, the location of highway facilities, and exclusionary zoning have been documented. When planners consider the notion of justice, they generally think in terms of groups of people who have more or less similar goals and objectives with respect to an issue.

While some believe that there is a single concept of justice, it has been demonstrated that there are indeed several concepts of justice, each encapsulating a different way of distinguishing between just and unjust states of affairs (*11*). The general account of justice—"to each his due"—is helpful in bringing out the distributive character of justice. However, the notion of justice can be considered from three viewpoints. First, the notion of conservative justice can be interpreted as that to which he has a right or is entitled. It may thus be expressed in the form "to each according to his rights."

Second, ideal justice is the principle of desert: people ought to be rewarded according to their deserts, i.e., depending upon the actions and personal qualities of the person said to be deserving. Thus a person's deserts may be measured by his moral virtue, his productive efforts, his capacities, and so on.

Third, the criterion of need is more central to ideal justice than the notion of desert. Thus, there are three conflicting interpretations of justice which may be summarized in the three principles: to each according to his rights, to each according to his deserts, to each according to his needs. Rawls and others have elaborated on these issues in terms of net good and maximizing benefits for the least advantaged in society (*11–14*).

Contemporary planning issues involve a number of parties whose interests or objectives conflict. The concepts of justice, including "justice as fairness," require that consideration be given to the distribution of benefits and losses that are implicit in alternative transportation planning decisions. Berry and Steiker (*9*) and Beatley (*10*) have examined these concepts in much detail in the framework of traditional benefit-cost analysis and the "maximin" strategy.

Procedural planning theory deals with making and implementing plans. It is concerned with the processes and techniques employed by planners in theory work as well as the operating modes of planning. Consequently, it is overwhelmingly focused on the means of planning and not the ends (*7*).

In transportation planning the predominant concern has generally centered on the tradition of rational comprehensive planning, also known as the synoptic tradition. Despite the great intellectual appeal of synoptic planning, there have been several major problems with this model, with the result that modifications and adjustments have since been introduced. For instance, should planning be comprehensive or incremental, centralized or involved with localized decision units, technocratic or participatory, long-term, middle-term, or just short-term? These choices pose major organizational and methodological problems that must be faced by transportation planners. For one, transportation planners do not plan in isolation but interact heavily with members in their team who come from diverse backgrounds—land use, environmental, energy-related, housing, etc. (*15, 16*).

Hudson (*15*) and Dzurik and Feldhaus (*16*), among many others, provide excellent summaries of the technical, social, and political adjustments that have been introduced in recent years to compensate for the shortcomings in the traditional synoptic planning model. Hudson critically examines the five well-known planning theories (or adjustments) labeled by the acronym SITAR—synoptic (*17–19*), incremental (*20, 21*), transactive (*22*), advocacy (*23–26*), and radical (*27–30*). Using six criteria as filters, Hudson points out the similarities, differences, strengths, and weaknesses of these theories. There are, of course, several other schools of thought beyond the SITAR package, and all of these ideas have been vigorously used at one time or another, some individually and others in combination (*31–34*).

DISCUSSION

All professions periodically take stock in the academics of their field because professions tend to change as their scientific foundations develop and as their technical apparatus is modified for economic, social, and political reasons (*35*). Transportation planning is no exception. Educators try hard to reduce the growing incongruity between transportation education and transportation practice. In a recent study, Vaughan and Pollard concluded that "if planning is to assume a central role in influencing public capital investment, it is important to ensure that the people doing the job have experience of how agencies operate and understand the day-to-day problems faced by those managing public programs and facilities" (*36*).

Transportation planning has finally come of age, and therefore the need to be intellectually and professionally defensible is felt keenly throughout the profession. One of the effective ways of satisfying this need is of incorporating planning theory in the graduate transportation curriculum (*35*).

Learning planning theory through a theoretical discourse about the planning process in general, and its impact on transportation planning, is a powerful means of improving professional understanding. This theoretical discourse can embrace a broad range of activities, including the abstraction of generalized processes from dense historical accounts of planning, and the identification of similarities between apparently dissimilar planning thrusts, the justification of outcomes, the creation of elaborate axiomatic theories, and the empirical testing of discrete causal propositions (*37*).

A legitimate question that may be asked is: What should be included in a course in planning theory? This is a tough question. Considering the breadth of planning theory, it would be quite in line for a graduate student to be able to answer a majority of the questions posed below after taking a course in planning theory:

- What do planners do?
- What do planners do for a client?
- What is the relationship between a planner and his/her client?
- What planning procedures are currently used?
- What is the sequencing of steps in each of these procedures?
- What problems are likely to be experienced in planning, evaluating, revising, adopting, and implementing these procedures?
- How do these various procedures and problems differ?
- What is the form and structure of organizations, communities, cities, and regions?
- Can restructuring these entities improve the situation?
- How can one choose a particular planning strategy for a community or city?
- How do different kinds of planning processes respond to variations in settings?
- What are the concepts of justice and fairness?
- What implications of equity are we dealing with in transportation?
- How can the traditional benefit-cost analysis procedure be modified to account for justice at the individual, group, or community level?
- What are the alternative communication and information processing approaches available to planners?
- Who controls power, and what do persons who attain power do with it (*37*)?

It is quite possible for this course to be taught through a set of case studies and readings. It is also possible that parts of this bundle of knowledge could be incorporated into other mandatory courses, although this strategy may not be as simple as it sounds.

SUGGESTED COURSE OUTLINE

The diversity in planning theory has indicated the need to advance synthesis and integration in presenting the subject to students and practitioners of urban planning. Such a framework will enhance the profession's ability to perform more prudently and efficiently (*38, 39*).

In a recent paper Lim suggests that planners ought to have three types of competencies: technical, interpersonal, and critico-ethical. Technical competency refers to the planners' ability to apply sound technical knowledge to their tasks. Interpersonal competency is a function of negotiatory, mediatory, political, and legal skills of planners. Critico-ethical competency refers to the planner's ability to examine the validity of goals, methods, instruments, and resources for planning. These competencies are essential to understand the political, social, economic, and environmental structure of society in which planners carry out their professional tasks (*40*).

A general topical outline and pertinent details for a three-credit course on planning theory for transportation professionals follows.

Outline

The Field of Planning and the Place of Transportation in the Planning Process
Conceptional Foundations of Planning
The Role of Government in Planning
The Role of Planners: What Do Planners Do?
Models of Planning Theory
  Synoptic—Rational Planning
  Satisficing, Incremental, Mixed Scanning
  Transactive Planning
  Advocacy Planning
  Radical Planning
  General Systems Theory
  Critical Theory and Planning
  Ethical Planning
  Planning as Social Learning
Values, Choices, and Purposive Behavior
Case Studies of Planning Theories and Transportation
Planning Successes and Planning Disasters
Summing Up: From Theory to Practice

Suggested Reading

Texts

Alexander, E., *Approaches to Planning*, Gordon and Breach, New York, 1986.

Altshuler, A., *The City Planning Process*, Cornell U.P., 1965.
Burchell, R.W., and G. Sternlieb (eds.), *Planning Theory in the 1980s*.
Clavel, D., et al., *Urban and Regional Planning in an Age of Austerity*, Pergamon, 1980.
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Hall, P., *Great Planning Disasters*, Weidenfeld and Nicolson, London, 1980.
Wachs, M. (ed.), *Ethics in Planning*, Rutgers, 1985.

Journals

Journal of Policy Sciences
Journal of Planning Education and Research
Journal of American Planning Association
Journal of Policy Analysis and Management, Environment and Planning
Transportation Research Record
Journal of Architectural and Planning Research

Format and Evaluation

The course would be taught through a combination of formal lectures, discussions, task assignments, and student presentations of term projects. Final evaluation may be based on class discussions (25 percent), assignments and take-home examination (25 percent), and term project (50 percent). Note the emphasis on class discussions and the term project.

RECOMMENDATIONS AND CONCLUSIONS

Theory accounts for planning: how it happens, how it ought to be done, and why planners plan at all are legitimate questions. Planning practice would be severely limited if answers to these questions were not available (*41*).

Reservations and disagreements have been expressed by theoreticians, academicians, practitioners, and other serious observers about almost every facet of the transportation planning process. This is a good, healthy sign. Controversy enriches the way planners think about the planning process. At the same time, because of the alternative styles of planning needed, transportation planners need to understand and be sensitive to constituent concerns. Thus, the ability to apply methodological procedures, buttressed by a knowledge of the substantive content of planning theory, should form an essential part of the kit of a transportation planner's/engineer's education.

It is evident that, at a minimum, all graduate students in transportation planning take at least one course in planning theory because planning, designing, constructing, operating, and maintaining transportation facilities represent annual commitments of hundreds of billions of dollars and involves meeting, influencing, and assisting a vast spectrum of public officials in crucial decision making. A much greater emphasis on the substantive and procedural content of planning theory in graduate planning education is therefore necessary. Such knowledge will enable transportation engineers to become more involved with the political, social, and economic systems within which they operate, including the ability to mediate, negotiate, and serve as an effective agent of planned change in transportation. This involvement will also enhance their chances of playing leadership roles in planning (*42*).

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