Product of the Transportation Education Process

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As a consultant, my interest in the transportation educational process focuses primarily on the type of trained person that emerges and becomes a part of a productive transportation planning organization. My viewpoint, although greatly tinged by my consulting experience, is also affected by previous experience with state and municipal governments and by recent observation of what various states need in the way of trained professional manpower. Any viewpoint on the type of graduate that is produced by a multidisciplinary education in transportation is also affected by the situation into which these new professionals will be moving.

The hiring agency recognizes that the university in 4 years of undergraduate work and perhaps 2 years of graduate work cannot convert a high school graduate into a mature and independent professional who is ready to take on responsibility for a project. The university can only start the growth process and provide the fundamentals that the new professional needs.

The hiring agency recognizes that it, too, has a continuing educational responsibility, in part because assuming that responsibility has a strong financial effect on its operations. The sooner we can develop a recent graduate into a person who can take responsible charge of a project and carry it through to completion (of course, with the support of other specialists in the organization) the better off we are. Hence we are extremely interested in training our people.

In this regard we believe that professionals will continue to grow as skilled technicians for periods of 10 or 20 years. The only limit on growth should be their own personal interest in growing. There is no reason why they should "dry up" after 4 or 5 years. Recognition of the possibility of continued growth is important because of the great complexity of the field of transportation planning.

In addition to recognizing the need for continuing training and the possibility of success in that line, both the hiring agency and the university must recognize the fluidity of the field of transportation planning. There are 5 areas in which changes are taking place, some more rapidly than others, but all at significant rates.

1. Methods of planning are changing rapidly. For example, the computer traffic assignment models and techniques for network representation are different from what they were 5 years ago and undoubtedly will be changed 5 years from now.
2. The types and extent of the data available are changing. Although the amount of

data does not seem to be increasing as fast as I would like, nevertheless there is more information available today then before, and this means that more different kinds of things can be done than before.

3. The content of the field of transportation planning is expanding very rapidly. Where 10 years ago transportation planning often was restricted in its meaning to urban transportation systems planning, today transportation planning must encompass corridor planning, project planning, impact studies, metropolitan systems plans for highways and expressways, rural transportation planning, transportation planning for special interest groups such as the poor, and statewide transportation planning. Statewide transportation planning in its own right has many subject areas including highway planning, planning for common-carrier person transportation, and planning for the movement of goods.

4. The number of persons who want to get into the act of transportation planning is increasing, and this includes citizens' groups and other special interest groups.

5. The pressure for useful and meaningful products of transportation planning is increasing. I believe there is a great danger that, if transportation planning becomes too "soft," too esoteric, and insufficiently relevant, the public will simply turn off the faucet. This has happened before in urban planning, and we should be aware of this reasonable demand for productivity and relevancy on the part of government.

This is the professional and organizational environment into which new graduates are moved, and it seems to me that there are 5 basic qualities and abilities that the graduate of a transportation program should have. These qualities and abilities are in addition to basic qualities such as intelligence, integrity, and courage, which are basic to one's rating of an individual.

1. The ability to write. Any product of a transportation planning program should be able to write simple reports quickly and effectively. Writing should not have to be taught by a consultant or a governmental agency.

2. The ability to do craftsmanlike work. Any product of a graduate program should be able to take a problem, stipulate what is given and what information is needed, determine the goals that affect choices, get data, propound alternative solutions, recommend a course of action, and write a report. The report should be documented, and the data should be appended and arranged in such a fashion that the next person can check what has been done. Such report writing should be done to a high level of accuracy. Standards of high-quality workmanship should be set in graduate school.

3. The ability to work with data. Much in graduate training is learning theories and learning facts and procedures of what has been done before. But just as a scientist should be able to work both in theory and in the laboratory, so the graduate student in transportation planning ought to be able to work with data. He or she should have actual experience in drawing samples, in interviewing people and measuring maps, in coding, keypunching, and checking data, and in analyzing data.

4. The ability to synthesize. So much is new in transportation planning that a premium is placed on a person's ability to bring together various pieces of information, to synthesize new theories, and to develop new methods. Simply applying old methods and solving problems by inserting numbers in existing formulas are not enough. The student should have training in developing methods. I believe that synthesis can be taught; some people will be better at it than others, but everyone that gets into a graduate school must have some of this ability. Architects are taught synthesis through the practice of designing buildings to solve human needs. The same can be done for transportation planners.

5. A creative skepticism. The graduate who comes out of school should be a skeptic, even of the methods taught in schools. Questioning is the habit of the critical mind. But this skepticism should not be carried to the extent of cynicism. The graduate must question, but ultimately he or she must do something as good as, or better than, was done before.