THE RELEVANCE OF TRANSPORTATION ENGINEERING

In a break with past tradition, there is no District Engineer for the Philadelphia region of the Pennsylvania Department of Transportation. Instead, the new position of “district administrator” has been created for the region, and a nonengineer appointed to the new position. According to my local ASCE newsletter, a spokesman for the governor said that “the shift in titles was symbolic of the interest in pursuing policies that use all aspects of transportation, not just engineering.” This switch to general management appointments in positions traditionally filled by engineers is unusual but not unique. In a recent Forum piece in Civil Engineering, J. Zirschky, the Acting Assistant Secretary of the Army for Civil Works, notes that nonengineers are assuming leadership roles in many areas of the U.S. Army Corps of Engineers (Zirschky 1996). He argues that “we need our best—engineers and nonengineers alike—leading the way.”

A first reaction to these changes is concern that the importance of technical competence and engineering professionalism may be overlooked in such appointments. The ASCE local section in Philadelphia is certainly expressing such a concern for the new position of district administrator.

A second reaction is that the change represents a challenge to the engineering profession. Engineers need to ensure that their core competencies are relevant to a wide range of transportation problem solving. Otherwise, civil engineering professionals will be relegated to the role of mere technicians. Of course, civil engineers in transportation might solely concern themselves with technical issues of structural design. Many professional engineers do so. But this narrow technical sphere would be a sideshow to the challenges of building and operating real transportation systems. It would also be a role subject to automation and competition from engineering technicians.

A concern for relevance should be a priority for engineering education, practice, and research. It is also critical for an archival, formal endeavor such as the Journal of Transportation Engineering. “Relevant” papers need not focus on ephemeral events, but should illuminate significant engineering issues in a rigorous fashion. The journal should be a record of lasting value to the profession throughout the world, containing a treasure trove of information to better understand transport phenomena or to aid in transportation design, operation, and problem solving. Too often, we are restricted by a narrow scholarly or technical focus and omit significant issues of engineering practice.

Good reviewers can help make papers relevant. Reviewers can insist that papers are motivated by actual transportation phenomena or problem solving, rather than by the demands or opportunities of applied mathematics. Reviewers can also ensure that new papers are placed in their proper context by insisting on appropriate references and discussion of the literature.

Authors have even more of a responsibility to ensure the relevance of their work. Papers should be ambitious, addressing significant issues or phenomena. Papers that elaborate on existing methods in transportation engineering are only minor contributions. Papers should be cognizant of the wider responsibilities of transportation engineers.

For example, much has been written on the opportunities and technologies of intelligent transportation systems. We need some good papers on implementation issues, such as discussion of practical financing methods for high-payoff investments like electronic toll collection or arterial controls.

As another example, there is widespread concern for the long-term economic and environmental sustainability of our transportation systems. Depletion of petroleum reserves, toxic emissions, and waste minimization are substantial environmental issues to address in this regard. We need rigorous analysis of the extent of these problems and their solution over a long period of time.

If we attack issues of significance and make real headway, engineering will be an attractive profession and engineers will expand their role in the world. Certainly many engineering graduates have done just that with their development in other careers and professions such as law or medicine. We should endeavor to make assets such as the Journal of Transportation Engineering broadly relevant.

APPENDIX. REFERENCES


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