

Biography and appreciation of Professor David Boyce

Tschangho John Kim

It gives me great pride and is an honor to summarize Professor David Boyce's scholarly and professional activities and to offer an appreciation for his contributions to the fields of transportation science, regional science and urban planning. He has been a dear friend, teacher, colleague, co-author, co-principal investigator, and roommate in many hotels while participating in international conferences.

During 37 years of research and teaching, Professor Boyce addressed key methodological issues related to metropolitan transportation and land-use planning. His early monograph, *Metropolitan Plan Making*, published in 1970, critically examined the experience with the land-use and travel forecasting models during the 1960s. Recognizing that these methods lacked an adequate scientific basis, he has since devoted himself to the formulation and solution of urban travel and land-use forecasting models as constrained optimization problems and related constructs, which synthesize elements of network analysis and modeling, stochastic discrete choice theory and entropy-based methods.

Through this research he concluded that the conventional travel forecasting paradigm, widely known as the four-step travel forecasting procedure, may be seen to be a counter-productive concept. By focusing research on individual elements of daily travel decisions, mainly represented as having fixed travel times and costs, the conventional point of view obscures the overall equilibria and interdependence of travel choices. To offer an alternative perspective, Professor Boyce rigorously formulated, implemented, estimated and validated large-scale, integrated models of travel behavior. His ongoing research offers an alternative, both to the conventional viewpoint, and to newer initiatives, some of which also lack a rigorous scientific foundation. He also extended this integrated approach to the study of regional economies, interregional commodity flows and freight transportation systems.

In addition to this primary research theme, from 1986 to 1996, Professor Boyce was an early innovator of in-vehicle dynamic route guidance systems, one element of the emerging field of intelligent transportation systems. This research culminated in his leading a multi-university team that performed development and evaluation tasks for the ADVANCE Project, a large-scale field test of a prototype route guidance system, in conjunction with Motorola, Inc., and federal and state transportation departments. In this role he also conducted theoretical and modeling studies of the performance of route guidance systems on urban road networks.

Following the completion of his PhD in the field of regional science in 1965, Professor Boyce has provided institutional support and leadership in various roles to the Regional Science Association International (RSAI) in North America, Europe and Asia. During

1969–89, he organized its North American Meetings; he also served as Secretary, 1969–78, and presently serves as Archivist. He was a co-editor of *Environment and Planning A*, and an associate editor of *Transportation Science*. In addition, he directed a National Science Foundation workshop on transportation research, and has served on many editorial boards in regional science and transportation.

In recognition of his research and service contributions to the field of regional science, in 2000 he was awarded the Founder's Medal of the RSAI; in 2002, he was elected as one of four Inaugural Fellows of the RSAI. In 2000, he received the University of Illinois at Chicago (UIC) Inventor of the Year and the UIC College of Engineering Faculty Research Awards for his contributions to transportation modeling and algorithms. He also received the University of Illinois Alumni Association's UIC Flame Award for Teaching Excellence in 2001. He is a Registered Professional Engineer in the State of Ohio, a Life Member of the American Society of Civil Engineers, and an Emeritus Member of the Transportation Research Board. He has published 165 journal articles, books, book chapters and reports during the past 38 years.

To list all of Professor Boyce's professional activities would be prohibitively voluminous; the following are highlights excerpted from his curriculum vitae.

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| 1961 BS | Civil Engineering | Northwestern University |
| 1963 MCP | City and Regional Planning | University of Pennsylvania |
| 1964 MA | Regional Science | University of Pennsylvania |
| 1965 PhD | Regional Science | University of Pennsylvania |
| 1966–1968 | Assistant Professor of City and Regional Planning, University of Pennsylvania, Philadelphia | |
| 1968–1977 | Assistant Professor, Associate Professor, Professor of Regional Science and Transportation, University of Pennsylvania, Philadelphia | |
| 1972–1973 | Senior Visiting Fellow, University of Leeds, UK | |
| 1977–1988 | Professor of Transportation and Regional Science, Department of Civil Engineering, University of Illinois at Urbana-Champaign; secondary appointment in Department of Urban and Regional Planning; Chair, Regional Science Program in the Graduate College, 1980–88 | |
| 1978–1994 | Associate Editor: <i>Transportation Science</i> | |
| 1978, 1985 | Guest Editor: <i>Transportation Research</i> | |
| 1979–1988 | Co-Editor: <i>Environment and Planning A</i> | |
| 1988–1996 | Director, Urban Transportation Center and Professor of Transportation and Regional Science in the College of Urban Planning and Public Affairs, University of Illinois at Chicago | |
| 1997–2003 | Professor of Transportation and Regional Science, Department of Civil and Materials Engineering, University of Illinois at Chicago | |