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## Gordon Newell Memorialized at TRB

### Former colleagues and students recall a pioneer in traffic flow theory

What one speaker called "a community of scientists" took part in "Foundations of Traffic Flow Theory: In Memory of Gordon Newell," at the 2002 annual meeting of the Transportation Research Board (TRB). Newell, Professor Emeritus in Transportation Engineering at UC Berkeley, died in an automobile accident last year at the age of 76. The panel was organized by Hani S. Mahmassani, Professor of Transportation Engineering, University of Texas, Austin, and by Nathan H. Gartner, Professor of Civil and Environmental Engineering, University of Massachusetts, Lowell, and chairman of the Committee on Traffic Flow Theory and Characteristics, which sponsored the event. It took place on Jan. 15 in Washington, D.C.

It was an unusual event for TRB, where the panels are usually restricted to dry, technical discussions. Speakers were emotional at times. One declared that it was the most difficult paper he had ever delivered. It was also unusual because, as his friends knew well, Newell did not attend TRB while he was alive (with perhaps one exception).

Among the participants who made formal presentations were Ezra Hauer, Professor of Civil Engineering at the University of Toronto; Vukan R. Vuchic, Professor of Transportation Engineering, University of Pennsylvania; Michael J. Cassidy, Associate Professor of Civil Engineering, UC Berkeley; Alan Erera, Assistant Professor of Industrial and Systems Engineering, Georgia Institute of Technology; Karen R. Smilowitz, Assistant Professor, Industrial Engineering and Operations Research, Northwestern University; and Gartner. More than a dozen former colleagues and friends spoke extemporaneously as well.

In 1950, Newell received his Ph.D. in Physics from the University of Illinois. In 1953, he joined the Applied Mathematics faculty at Brown University. Newell became a member of Berkeley's Civil Engineering faculty in 1965 and later joined the Department of Industrial Engineering and Operations Research as well. He remained active after his retirement in 1991.

His contributions to traffic flow theory and queuing theory are milestones in those fields. Among the areas of study that Newell helped shape were kinematic wave theory, which describes how cars behave in stop-and-go situations, and the shock solution, which describes how a disturbance in freeway flow will affect traffic far behind.

#### ***He Never 'Added to the Noise'***

Newell authored fewer than 100 papers and was modest about promoting himself, many of the speakers recalled. "Gordon's work never added to the noise," Cassidy explained. "His publications are a treasure trove; they advanced our fields and are there to serve those who did not know Gordon."

Still, Hauer noted, "A large part of his legacy is not to be found just on paper. A large part of his legacy lives on in the minds of the people who came in contact with

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him." Gartner described it as "some kind of reverse engineering," working back from the present to re-discover Newell's work from decades earlier.

Newell was known among friends for his aversion to computers, yet he worked in such computationally demanding fields as solid-state physics, statistical mechanics, queuing, scheduling, location theory, logistics and network design. Cassidy recalled his wide range of research pursuits: "Public transit, air transportation, even elevators didn't escape his interest." Newell also did empirical work, Cassidy said, helping Les Edie of the Port Authority of New York with his pioneering studies of traffic flow through New York City's tunnels.

"Gordon disdained what he held as failed attempts to adapt beautiful theories of gases to vehicular traffic. But this is just one item in a long list of traffic theories and viewpoints that Gordon believed were wrong. Gordon had an uncanny talent for looking at a theory and quickly seeing its underlying assumptions and the nature of its outputs. This led him to dismiss a great many ideas rather quickly," Cassidy said. That didn't mean that he was unduly negative or unconstructive. "As a good scientist, he believed that the rate that any field advances depends, in part, on how quickly bad ideas are dismissed."

At UC Berkeley, the Gordon Newell Fellowship has been established to honor Newell. Juan Carlos Munoz, a Ph.D. candidate in Civil Engineering, was the first to win the award, which is given to an outstanding transportation graduate student. The ceremony took place on March 22. For photos from the event, please go here [www.its.berkeley.edu/news/awards/newellfellow.html](http://www.its.berkeley.edu/news/awards/newellfellow.html).

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